The Citrus Industry
EXCLUSIVE SPECIALIZED CITRUS PUBLICATION
Issued Monthly
Representative of every interest
Representing no special interest

Vol. 9 TAMPA, FLORIDA, JUNE, 1928 No. 6

Feeding Citrus Trees From A Physiological Viewpoint

By E. L. Lord, at Meeting of State Horticultural Society

It is with a great amount of diffidence that this paper is presented to the Horticultural Society. In the first place our knowledge of what goes on in the tree is so meagre and uncorrelated; and in the second place the author has not had as much time to give to the preparation as would seem desirable.

Your Secretary asked me to treat the feeding of citrus trees from the standpoint of the internal composition of the tree. In the first place we do not know how far the experimental work done on other horticultural plants is applicable to the citrus tree, but it is a known fact that certain fundamental processes have been found generally true in the woody plants, and there is as yet no evidence to prove that they are not similar in the citrus tree; and until there is evidence proving that the citrus tree is a shining exception, it seems to me that we are right in assuming that woody dicotyledonous plants are similar in their internal reactions, until we can prove minor differences. If this were not true it would force us to repeat all our experimental work on each species and variety of economic plants which would be very time-consuming and impractical. In the mean time it is the part of wisdom to act on general information which we already have; if it proves to be unworkable in minor details then we must of course make detailed studies to find where and why it fails.

While this paper is limited to a discussion of the internal factors affecting the tree it is in order to call to your attention the fact that this internal mechanism will not function properly if there is a deficiency of any primary substance. In the order of importance the substances most commonly found as limiting factors on growth are, — water, nitrogen, phosphorus, potash, and various other elements. While some of these elements may not be needed in large quantities, yet a lack of them may inhibit growth. This lack may be due to a deficiency of the soil, or to an inability of the plant to absorb or translocate food materials even when present in the soil.

All of the elements used by the plant are taken up in the soil solution. Oxygen and Carbon are also taken into the plant from the air. Until recently it was supposed that all the Carbon used by the plant was taken from the air, but Stoklasa's experimental work shows that plants get CO_2 also from the soil when there is a large amount of decaying organic matter present, and this is one more added reason for the incorporation of large amounts of humus forming material into the soil. It is also very evident that if all of the elements required by the plant are brought up in the soil solution, water is the foremost factor affecting the nutrition of the plant, as it is the carrier of all the other materials. Furthermore, it is the main substance entering into the composition of the plant. The fact that soils containing a high percentage of organic matter are also of high water-holding capacity helps to explain why both the fruit and the tree suffer less from drying out on such soils. While it is true that the citrus tree along with other woody perennails has developed the ability to get along on a much lessened supply of water, yet it is also true that neither maximum growth nor maximum production of fruit (normally a surplus product) are possible unless the tree has a generous supply of water at all times.

Next to water nitrogen is most commonly found to be the limiting factor in orchard fertilization. If this is true generally throughout the United States, how much more should we emphasize it here in Florida, where our soils are generally deficient in this element which is so essential to growth. If there is an abundance of water present and the soil is well aerated and biologically active then the amount of growth bears a very close relation to the amount of nitrogen in the soil. Organic soils with a high water holding capacity not only can contain a high percentage of Nitrogen in the

soil solution, but due to the fact that their water holding capacity may be ten times as great as sandy soils, they may carry available to the tree ten times as much food in the solution without endangering the tree to the slightest extent by excessive concentration. After the water is supplied nitrogen is the most important ingredient of the plant cell, and our interest in the sources, methods of application and effective use of nitrogen is based on sound principles.

Phosphorus is also often lacking in our soils, particularly in those deficient in organic matter. However, due to the fact that phosphorus is available and cheap, fertilized trees rarely suffer in Florida from a phosphorus deficiency, and probably never on soils which contain large amounts of humus. The principal valus of applications of phosphorus to Florida citrus soils is found in the effect of this element on bacterial activity, particularly on cover crops, and in the effect of phosphorus on nitrogen absorption.

Potash is usually not needed in large quantities for the growth of the tree, although there may be a definite potash deficiency on some of our soils. Our main reason for applications of potash to the citrus groves is found in its relation to photosynthetic activity, and its effect on absorption. By stimulating photosynthetic action and by slowing down the absorption of nitrogen it affects the quantity and quality of citrus fruit.

Two years go at a meeting of this Society I presented a paper on pruning, in which I discussed the carbohydrate nitrogen ratio and its relation to pruning. A more complete discussion of this ratio may now be found in that paper. There are three of these relations which I wish to discuss here. As many of you remember I called your attention to the fact that the nitrogen was absorbed by the root system and that the carbohydrate was manufactured in the leaves and that the behavior of the plant had been found to depend much upon the relative amounts of these two substances found. For example, if there is a shortage of both the tree will show yellowed foliage and no growth; if there is a large amount of nitrogen and a moderate amount of carbohydrate in the tissue, the plant will make vigorous growth; but if there is a large amount of carbohydrate and a limited amount of nitrogen, fruit bud differentiation will take place. In other words, if the root system is more active and supplied with water and the elements necessary for making tissue in the proper proportion growth is the result, while if the leaf system is the more active and absorption is slowed down fruit bud formation takes place.

The problem of growing a citrus tree is then comparatively simple. Just give it the amount of materials in the right proportion in the right medium so that the plant may absorb the largest amount possible and use it to the best advantage in making new wood. In older trees this other problem is added,—see that it stores as much nitrogen as possible in the wood and twigs during the fall and winter; as the new growth which takes place in the spring rapidly removes the nitrogen from the older adjacent wood and uses it in growth; then see that soluble nitrogen is available at the roots to take its place, so that growth is not checked, as in the cooler months it takes about four times as long for nitrogen to reach the twigs as in the midde of summer. Incidentally, as intrification is reduced from 75 to 90% in the winter and early spring, there is no gain whatever in applying organic or unavailable nitrogen in late fall or early spring. The nitrogen should be soluble, and it is even necessary for best results to apply it on soils which contain an abundance of organic nitrogen as in the citrus tree the blooming and setting of fruit takes place before nitrification can make this organic form available for absorption. As an added reason for a generous feeding of soluble nitrogen to the non-bearing tree in fall, winter, and early spring it might be desirable to call to your attention the fact that a tree which makes larger shoot growth in early spring has many more leaves available for the production of carbohydrate during the rest of the year, and in consequence is able to produce much more energy—carrying material (carbohydrate) during that year; this added impulse given by increased early spring growth each year is very evident in increasing the vigor of the tree during the succeeding years.

Another factor regarding the use of nitrogen-carrying fertilizers often overlooked is the effect of the various sources of nitrogen upon the soil reaction. While it is generally true that trees growing in soils containing a large amount of organic matter are able to absorb nutrients from a solution which would otherwise be unfavorable because of acidity or alkalinity, yet it is also true that there is a proper degree of soil acidity for each kind of plant, and the less organic matter in the soil the more liable the plant is to be injured by an unfavorable soil reaction. As the citrus trees are minimacid plants, that is, do best in soils that are slightly acid; it is important for best results that the grower know the acidity of the soil, so that he will not affect it injuriously by his choice of nitrogenous fertilizers, as increasing or decreasing soil acidity very must will affect not only the amounts but the kinds of nutrients absorbed, and in consequence the growth and vigor of the tree. The greater the moisture holding capacity of the soil, the less acidity can be affected by the addition of soluble sources of nitrogen. If the soil is to be kept at the original reaction soluble nitrogen from two sources must be used; for example to balance the acidifying effect of one pound of ammonium sulphate three pounds of nitrate of soda should be given.

It appears to the speaker that no grower can use the soluble sources of nitrogen intelligently unless he knows the soil reaction of his grove. Furthermore unless there is sufficient available water for the three throughout the growing season either because of the type of soil or through irrigating he cannot expect these nitrogenous materials to be efficiently translated into growth. Although many growers have likened the behavior of these substances to dynamite, the fault does not lie in them, but in an ignorant use of them; in the hands of the abler growers they are the means of producing vigorous growth and heavy crops of good quality fruit every year; but only with certain varieties on certain rootstocks growing in subirrigated soils having large amounts of organic matter. If one of these factors is absent, trouble usually occurs; although there are men who by virtue of their knowledge of tree response through long experience can handle these substances to advantage in their own groves; when they try to repeat the operation in other groves they fail because of different conditions. In the ordinary application of balanced fertilizers throughout the year there is not ordinarily sufficient nitrogenous fertilizers to upset equilibrium; neither can sufficient soluble nitrogen be applied in this way without adding other substances not so valuable that are injurious in the amounts applied; but while balanced fertilizers in small amounts are the

Continued on page 30

Efficiency of Winter Cleanup as a Control Measure for Citrus Aphids

By W. L. Thompson

I wish to briefly review the history of the Citrus Aphid in relation to the minimum temperatures during the years since this species of aphid became a pest in Florida.

Although the early part of the winter of 1924 and 1925 was rather dry and the trees were not putting out much growth, we had no freezing weather, especially in this section. The lowest temperatures recorded at the Lake Alfred Experiment Station were 34 degrees in November, 42 in December, 45 in January and 34 in February. Quoting from the Agricultural Experiment Station Bulletin 174 Professor J. R. Watson and A. H. Beyer: "But warm weather following ample showers caused much new growth in January". This new growth gave the aphids a wonderful opportunity to increase to such numbers that by the last of February there was a heavy infestation over the whole citrus belt. During the winter of 1925 and 1926 the temperature went down to 32 degrees at two different times in this section, although very little foliage was damaged as the trees were in a more dormant condition than the year before. There were not many aphids present in January and February in this locality. The general infestation in the spring was not as severe as the year before.

During the winter of 1926 and 1927, at several times, the temperature was low. In December it went to 33 degrees and in January to 31, 24 and 27 degrees during three successive days, which resulted in the killing back of practically all succulent growth. In March the temperature again dropped to 32 degrees. There was a lighter infestation last year than the two preceding years.

During this last winter (1927 and 1928) we had not only low temperatures but very dry weather, with the result that the trees, with few exceptions, became quite dormant early in the fall and remained so during the winter. January 2nd, 3rd and 4th, the temperature went down to 33, 23 and 27 degrees respectively, and again on January 29th the temperature went to 28 degrees, giving the trees little chance to put out new growth. Generally speaking, the amount of infestation by aphids is hardly noticeable this year. All the temperature records given are those of the Lake Alfred Experiment Station.

Our observations show that the aphids have become more and more scarce in the last couple of years, because they have been starved out rather than killed by the low temperatures. Last year Mr. Miller of the Experiment Station observed that aphids lived through the low temperatures, and I observed the same thing this year. Six days after the temperature had gone down to 23 degrees, and all the succulent foliage had been killed on a young citrus tree that was infested with aphids, there were still a few aphids seen crawling about looking for suitable foliage on which to feed.

At the time of the cold spell, January 2nd, 1928, I knew of four groves in which there was quite a sprinkling of aphids, but ten days later I could find aphids in only one of these.

As is well known, the effects of cold are often more or less freakish in that some tender foliage escapes being killed by the low temperature. A few trees having tender foliage in one of the groves I had been observing during the past winter escaped being frozen back and these few trees had enough succulent foliage to keep a few aphids alive until new growth came out.

To illustrate and also find the value, if any, of keeping a grove free of aphids during the winter so there would be fewer to start an infestation in the spring, I made observations in a grove where I knew there were aphids and also in a plot on the Experiment Station grove where no aphids could be found. The plot where aphids were present will be referred to as Plot A and the section on the Experiment Station at Lake Alfred as Plot B.

In Plot A there should be 1050 trees but 72 are missing, either having died out or rough lemon sprouts having come up. Every other row in this grove is tangerines and the rest orange sand grapefruit, there being only 95 grapefruit trees or four rows out of forty-two. The oranges and grapefruit were budded on tangerines last year so there has been tender foliage there almost the whole year. The infestation on grapefruit and rough lemon was not figured in the final results but is given separately.

Plot B, at the Experiment Station, has 128 trees, 3 years old. There are 80 orange trees and 48 tangerines. No aphids were known to be in this plot at the beginning of the observations.

In making these observations, each tree was inspected, and, if only one small colony of aphids was found on a tree it was marked "infested". These observations were started on February second, but each tree was not inspected at that time or during the first week, but after the first week each tree was inspected weekly for seven weeks, or until March 23rd.

In Plot A, I know of only three trees that were found infested during the first week, but not every tree was inspected.

By February 8th, the second week of the observations, six trees were infested in Plot A, or .67 percent. These infested trees were all oranges, as the tangerines had not put out any growth at that time. No trees in Plot B showed infestatoin.

Plot A, on February 16th, the third week of observation, 24 trees were infested, or 2.7 percent. Four of these trees were heavily enough infested so that they suffered commercial damage, that is, a large percentage of the new leaves was curled. At this time the caretaker of the grove dusted two of these heavily infested trees, which helped check the infestation at that time.

I say the infestation was checked at that time by the dusting of these two trees because they had many winged female aphids and nymphs with wing pads which would have developed into winged females in a few days. Just as long as a tree has

plenty of succulent growth and the aphids are not crowded, the aphids develop into wingless females; but when the leaves start to harden or the aphids become crowded, winged forms develop in order that migration to more suitable feeding grounds may take place. On one twig there were 50 winged females, 70 wingless, 200 nymphs with wing pads and 500 very young nymphs. This count was made from an average twig on one of the heavily infested trees. On a rather newly infested tree where there was an abundance of succulent growth, the aphids were counted on one twig which showed 100 wingless females and about 800 nymphs with no wing pads showing.

In Plot A, by the fourth week, the infestation had increased from 2.7 percent to 4.19 percent. At this time the caretaker again dusted three more of the heavily infested trees, but he did not take the time or trouble to look at each tree in the grove.

By the fifth week, February 28, 6.34 percent of the grove (Plot A) was infested. On this date two trees in Plot B were found to have aphids on them.

The observations of the 6th week show a marked increase of infestation in Block A, as it went from 6.34 to 21.63 percent. The heavily infested trees that had not been dusted had many winged females and nymphs with wing pads. Up to this time the infestation had been mostly in the northern half of the grove but now infested trees were scattered over all parts of the grove.

The infestation in Plot B increased from 2 trees to 6 or 4.69 percent, but, all the colonies were small except on one tree.

The infestation in Plot A increased from 21.63 to 52.77 percent by the seventh week, with quite a few of the trees rather heavily infested. The caretaker had again dusted some of the infested trees which would partly check the spread of the aphids as he dusted only the heavily infested trees. In plot B, the infestation had increased to 23.43 percent. One tree was heavily enough infested to cause some commercial damage to the tree.

On the eighth and last week of the observations, which ended March 23, the infestation in Block A had increased to 57.87 percent. The caretaker had again dusted and sprayed some of the infested trees. The growth on a majority of the young orange trees had hardened and no aphids were observed on many of the ones that had been infested a couple of weeks before. In Plot B, the infestation had increased to 44.53 percent but the growth was so far along that the danger of any damage was over. Only one tree in the whole block became heavily enough infested to be damaged.

During the eight weeks of observation, 77.01 percent of the trees in Block A were infested at some time and 58.59 percent in Block B.

In comparing the infestation in these two plots there were 18.42 percent more trees infested in Plot A than in Plot B. This does not seem to be such a great difference but there were 52 trees commercially damaged in Plot A and only one in Plot B. Had there been aphids in Plot B during the first week the observations were started, it is quite likely that more trees would have been infested and more damage done, but, by the time the aphids were spreading, the growth was too far along to suffer damage. We must also remember that the aphids were killed on two of the four heavily infested trees in Plot A at a time when the trees were in the right condition for the aphids, which very likely kept down the infestation to a marked degree. Had the dry weather continued with the new growth coming out slowly as it was before the rain we had in March, I believe that the infestation would have been more severe. After the few good showers we had in March, the growth came out fast and hardened quickly which was a death blow to the aphids.

I realize that we only had 128 trees in Plot B against 883 in Plot A, but, after the last observation was made, I inspected over 200 more trees of the same age and in the same section of the grove and found that only one had been infested heavily enough to cause commercial damage.

Of the 95 grapefruit trees in Plot A, 20 became infested and 2 were infested rather heavily for a short time but the leaves soon hardened up and little damage was done.

The aphid predators, the ladybeetles and syrphus flies, did very good work in keeping down the infestation in Plot A. When inspecting the trees for aphids, I frequently found that a tree that was infested during one week did not have any the following week, although the foliage was still succulent enough to support aphids. One familiar with the ladybettles and syrphus flies could see their "tracks", that is, skins of aphids killed by them, or, in many cases, still find the predators themselves. Evidently the predators had destroyed these colonies. Eliminating a small colony of aphids early in the season means the reduction of their numbers by thousands in several weeks if succulent foliage is present.

Due to the fact that aphids were present in Plot A all year, there were more predators present in the spring in that grove than in the average grove. In comparing the numbers of predators present in that grove and in groves where aphids were not present all year, we find the following predators per 10,000 aphids: In Plot A, Blood-Red Ladybeetles, 30 larvae and 12 adults; Hippodamia convergens, 5 larvae and 4 adults; Two Spotted Ladybettle (Olla abdominalis sobrina), 2 larvae and 10 adults; of the syrphus flies there were 46 larvae of Baccha clavats, 6 larvae of Syrphus wiedemanni and 4 of Baccha lugens; a total of 121 predators or a predator for about 83 aphids. In a grove where the infestation of aphids was much later in appearing, the predators per 10,000 aphids were: Blood-Red Ladybeetles, 6 larvae and 3 adults, and of the syrphus flies, 6 Syrphus wiedemanni larvae and 17 Baccha clavata; a total of 32 or 1 predator to about 312 aphids, considerably less than a third as many predators as in Plot A.

Of course we cannot afford to keep citrus aphids over the winter to support the predators which are no match for aphids when conditions are favorable for their growth. But in many cases it would be possible to plant truck crops, such as turnips, radishes, mustard and collards, adjacent to the grove. These vegetables become infested with the common vegetable aphids which are food for most of the predators that feed on the citrus aphids.

I would like to say a word here with reference to the aphid predators as to one of the reasons they do not become more abundant when aphids are so numerous. In collecting some hundreds of larvae of the ladybeetles and syrphus flies, I found that a very large percentage of them died from what appears to be a bacterial disease and many are parasitized by several different species of hymenopterous parasites.

In March 1927, 108 of the Blood-Red larvae were collected, of which 18.5 percent reached maturity, 11.1 percent were parasitized by hymenopterous and 70.3 percent died of

Continued on page 27

Gardening, Perennial Planting Program for Home Demonstration Work

By Isabelle S. Thursby, Food and Marketing Agent

I am a Floridian and here at this meeting I feel that we are all in the bosom of one family, and can talk over our short comings and "brag" a little about our virtues without danger of being misunderstood. We are justly proud of Florida and have been shouting her praises. We have not failed to tell the world that Florida's citrus fruits are the juiciest, sweetest and best flavored on earth, and that every vegetable not limited to a cold climate will thrive here.

Yes, we have advertised Florida. We have spent thousands, yea, millions of dollars in all kinds of advertising schemes, and people everywhere have talked Florida, read Florida, dreamed Florida and,—even recently had nightmares about Florida. While we have been doing so much shouting, an old quotation has risen like Banquo's ghost, and would not be quieted—"What you do talks so loud I cannot hear WHAT you say".

While we have boasted about the superiority of the Florida soil and climate, South Florida has imported eighty percent of the food she has consumed, California, a state of similar climate and growing conditions, supplying the bulk. Central and Northern Florida are not guiltless in the matter of importing fruit and vegetables, for notwithstanding their boast that anything can be grown. they have also imported both fruits and vegetables.

True, Florida does ship vast quantities of fruits and vegetables to norther nand eastern markets. but Florida people themselves and Florida rural people in particular, fall far short of having the fruit and vegetables that soil and climate would make possible, and which optimum mean health demands. Many people in the rural sections are without fresh vegetables for many weeks of the year, and the health of the children and adults as well, is far below what it should be, with the proper and plentiful use of those products.

A large portion of Florida land is recognized as the finest of growing soil, and the climatic conditions are said by experts to be ideal. Figures show the productiveness of Florida land under cultivation as thirty three and a third percent greater than that of other states, yet we cannot FEED OURSELVES.

Florida stands as the largest shipper of fresh tomatoes in the United States, but from thiry five to forty percent of all tomatoes sold in Florida are shipped in, and at least half of the celery is brought in from other states, principally from California. California lettuce is available in Florida ten months out of the twelve, and is in great demand at excessive prices, so well is the public's palate educated to its taste. Florida's beautiful though green leafy type lettuce, is far richer in minerals and vitamine content than the hard, head type lettuce of California, but Florida people have been educated away from the Florida variety, and with all our boasted love for the state, our loyalty wanes when it comes to pleasing our pampered palate.

Only twenty five percent of sweet potatoes, and less than thirty percent of the Irish potatoes, and only fifty percent of the cabbage consumed, are Florida grown.

Many Florida folk do not know the names of the fruits and vegetables that grow luxuriantly here and would not know them if they were to see them in the markets. They are not familiar with many of the names of the fruits and vegetables being grown here for Eastern consumption.

The endive, which Florida tourists order on the bill of fare at European hotels, thrives in Florida and is shipped out in large quantities. In fact, Samula district shipped fifty carloads of escarole, first cousin to the endive, within recent months, but I doubt there are fifty families in the whole of Florida planting and eating escarole.

Florida soil and geographical conditions make the production of a vast variety of marvelously interesting fruits and vegetables possible,—yet strange to say, Florida people consume a small portion of the annual harvest, but pay fancy prices for fruit imported from other states and other countries, rather than featuring and eating her own.

Florida with her diversity of soil, planting seasons, and climate produces a wide range of fruit, including all varieties from the well known strawberries, blueberries, peaches, pears, pecans, figs, bunch grapes and muscadines of North Florida, to a wealth of choice tropical fruits—the pineapple, avocado, mango, guava, lime, banana, sapadillo, sugar apple, coconut, papaya, Surinam cherries and tamarind of South Florida.

Unfortuntely, many of the latter, which grown only in favored sections of Florida, are produced in a very limited quantity. Even the guava which is grown nowhere else in the United States, except as an ornamental yard plant in California, and which is everywhere but in its own state, recognized as one of the most versatile and delightful of economic ornamentals, only thrives—in SPITE of us. We do not look upon it as the asset that it is. Florida folks even laugh when it is mentioned. Where is there a hotel or cafe in Florida whose menu does not constantly feature California canned peaches (and they ARE good peaches—the name California stands for superior products,) while right here at home we have the finest substitute peach that man could ask for—growing in perfection. With these facts before us, and recognizing the need of Florida people for fresh fruits and vegetables at all seasons of the year, the home demonstration department of the Florida State College for Women, mapped out an educational program in gardening and perennial planting. One of its important objectives is the production of an adequate supply of fresh fruits and vegetables in every home in Florida and a plentiful use of these products.

A second objective is the beautification of the Florida home through the planting of these many kinds of valuable economic ornamentals, that can be grown so easily and are so lamentably scarce.

Continued on page 28

The Experiment Station and the Citrus Industry

By Wilmon Newell, Director, University of Florida Agricultural Experiment Station, Gainesville, Florida

Of all the agricultural industries in Florida today, none is so much in need of exact knowledge as is the citrus industry. The very fact that it is the greatest agricultural industry in the state and that it is facing the problem of profitable disposition of its products, has brought keenly to attention the need of more complete and dependable information upon all phases of citrus production and handling. The production of quality fruit, the control of insect pests and diseases, economical and efficient use of plant foods, cultural methods, competitive production and transportation and distribution of the product are all vital factors affecting the financial returns.

Although frankly admitting that the Experiment Station is not doing as much for the citrus industry as its importance would seem to demand, the Station has, nevertheless, contributed much to the upbuilding of the industry in past years and is today actively engaged on many important citrus projects.

Because a valuable practice, once established, becomes of general use and its origin is soon forgotten, it may not be out of place to review some of the past work of the Station which has benefited the citrus grower.

Before doing so, however, I would like to digress for a moment to tell you of what the Experiment Station consists at the present time.

We have, not one experiment station, but an experiment station system, if you please, and all of it is a division of the College of Agriculture of the University of Florida. All work of the branch experiment stations and field laboratories is planned and directed by the Director and departmental heads in the "mother station" at Gainesville, so that the work of all is planned and coordinated with a view to securing the maximum results with the least expenditure of money and effort.

This map shows the main station at Gainesville and the three branch experiment stations at Quincy, Lake Alfred and Belle Glade, the three latter being devoted, respectively, to tobacco, citrus and peat land studies and experiments.

The map also shows the seven field laboratories located at the following points for the study of the problems indicated:

Monticello — Pecan Insects and Diseases.

Hastings — Irish Potato Diseases.

Cocoa — Citrus Wilt.

Sanford — Celery Insects.

Plant City — Strawberry Diseases.

Homestead — Tomato Diseases.

Bradenton — Tomato Diseases and Poultry Parasites.

The work of the field laboratories at Sanford, Homestead and Bradenton is, in part, in cooperation with the United States Department of Agriculture.

Reverting now to some of the Station's past accomplishments:

The successful control of citrus white fly is based to a large extent on the work done at the Station in earlier days. It was the Experiment Station that devised the methods of growing white fly fungi (Aschersonia) in pure cultures, so that any grower could quickly and cheaply disseminate these beneficial fungi thru his grove. The methods of reducing damage by thrips, both by nicotine sprays and destruction of weeds which are host plants are also traceable to the Station, as are numerous improvements in methods of controlling scale-insects.

The Station has, for years, shown the importance of careful handling of the fruit as a means of reducing losses from blue mold, it has shown that stem-end rot can be greatly reduced by keeping the trees free from dead wood and scale-insects, that anthracnose can be checked by spraying with ammoniacal solution of copper carbonate and that melanose control can be effected by use of Bordeaux-oil sprays on young fruit. It has pointed the way to eliminating losses from foot-rot, by determining the practical immunity of sour stock and has thereby indicated the proper selection of stocks for different locations.

Nutritional studies have shown that a lower amount of potash can be safely used for citrus than was commonly supposed, and that the application of limestone on sandy soils is injurious to citrus trees. Much information of practical value has been adduced as to the comparative value of fertilizer elements from various sources.

The Expericent Station was the first to bring out the fact that the only possible hope of controlling citrus canker lay in complete destruction of all infected trees. This was the foundation laid for the State Plant Board's subsequent success in dealing with this scourge.

More recently, the Station workers have shown that much can be accomplished in control of the citrus aphis by proper grove management and the Station has introduced enemies of the citrus aphis which bid fair to materially augment the natural control of the pest.

In reciting these achievements, we have no desire to claim that the Experiment Station is entitled to exclusive credit for what has been done, nor are we disparaging the accomplishments of other workers in these fields: we are merely trying to point out that the Station has done its full part.

Along other lines, the Station has also benefited the citrus grower. For example, most people have forgotten that the present use of the velvet bean as a great soil-enriching crop was due to the work of the Florida Experiment Station with this plant. The Station recognized it as a valuable legume and cover crop and then developed quick-maturing strains, several of which are grown all over the southern states today.

More recently, the Station, in cooperation with the United States Department of Agriculture, has introduced and shown the value of Crotalaria as soil builder for citrus groves.

It is also interesting to note, in passing, that since its establishment in 1888, the Experiment Station has published a total of 192 bulletins. Of these, 38 have dealt exclusively or primarily with citrus matters. These citrus bulletins total 1237 pages and 343,744 copies of them have been issued.* The total amount of printed

* Some of earlier editions estimated from statements appearing in annual reports.

matter in these editions amounted to not less than 11,251,000 pages.

The above does not include press bulletins nor the thousands of pages of press and magazine articles on citrus subjects contributed by members of the Station staff. Certainly, it cannot be said that the Experiment Station has not furnished literature for the citrus industry!

The Experiment Station workers have no inclination to rest content with what has been done, for the work now actively under way will, we believe, bring results of even greater value for the future.

Of more than 120 major research projects now being pursued, some 33 are directly connected with or have a vital bearing on the citrus industry. These are found in the fields of Horticulture, Chemistry, Entomology, Plant Pathology, Agronomy, Agricultural Economics, Home Economics and even Animal Husbandry.

This paper would fall short of its purpose if it did not convey to you some specific conception of what the Experiment Station is doing and trying to do for the citrus industry but lack of time makes it necessary to cover this part of our discussion by merely reciting the principal subjects now under investigation. They are as follows:

Map showing location of agricultural experiment stations and field laboratories of the University of Florida College of Agriculture. The Main Experiment Station at Gainesville, and the Branch Experiment Stations, are indicated by squares and the field laboratories by circles.

Cover crop and green manure studies in citrus groves.

Soil and nutrition studies with reference to dieback of citrus.

Determination of the effect of varying amounts of potash on the composition of oranges and grapefruit.

Determination of the fertilizer requirements of Satsuma oranges.

Determination of the effect of various potash carriers on the growth of citrus trees and composition of the fruit.

Determination of the effect of various phosphoric acid carriers on the growth of citrus trees and the composition of the fruit.

Composition of citrus crops as influenced by fertilization and soil types.

Determination of the effect of green manures on composition of the soil.

Determination of the effect of the cause of poor crop growth due to liming sandy soils.

The green citrus aphis.

Florida flower thrips on citrus.

Study of plant bugs attacking citrus.

Introduction and study of beneficial insects—such as Delphastus, the white-fly-eating lady beetle, etc.

Testing of various citrus hybrids.

Tests of different stocks for the Satsuma orange.

Grapefruit refuse as a dairy feed.

Fundamental physiology of citrus fruit production.

Citrus diseases: including gumming*, melanose, stem-end rot, citrus canker*, anthracnose of citrus fruits, citrus scab, citrus wilt, and scaly bark.

Entomogenous fungi attacking the citrus aphis.

A study to determine the cost of picking, hauling and packing of Florida citrus fruits in approximately 100 packing houses operated by both marketing associations and private organizations.

A study of the cost of transportation of Florida citrus fruits, with comparative costs from other States and foreign countries.

Study of the factors affecting the jellying of kumquats.

Tests of introduced and new varieties and hybrids of citrus and near-citrus.

Variety tests of various citrus varieties on different root-stocks.**

Progeny and bud selection investigations.**

Propagation experiments with various citrus plants.

Citrus fruit trials on peat lands of the Everglades.

These investigations, though covering a wide variety of subjects, are still not adequate to meet the needs of the citrus industry. Many promising lines of investigation are open to the Station workers, but they cannot be pursued more rapidly than available appropriations permit.

* In cooperation with State Plant Board.
** In cooperation with Bureau of Plant Industry, U. S. Department of Agriculture.

The Citrus Industry

with which is merged The Citrus Leaf

Exclusive publication of the Citrus Growers and Shippers

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Published Monthly by
Associated Publications Corporation
Tampa, Florida

Subscription, $1.00 per year in advance

Entered as second-class matter February 16, 1920, at the postoffice at Tampa, Florida under the act of March 3, 1879.

Branch office and production plant, Bartow, Florida.

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GROVE CALENDAR FOR JUNE

Some Timely Suggestions for Grove Work During the Present Month

Stop cultivating bearing groves when summer rains begin.

Finish fertilizing this month.

Plant bush velvet beans or cowpeas in the middles of young groves.

Prune out dead wood in citrus trees to control withertip.

Watch for rust mites on citrus and at the first appearance dust with sulphur or spray with lime-sulphur (1 to 70).

Spread the parasitic fungi to control whitefly and purple scale on citrus, especially on trees sprayed with bordeaux or bordeaux-oil.

Spray pecan trees with 4-4-50 bordeaux to control pecan scab; repeat every three or four weeks during the summer.

THE CLEARING HOUSE SITUATION

The past thirty days have witnessed a number of developments in the situation surrounding the organization of the proposed Growers' Clearing House.

Up to a month ago no public demonstration of opposition to the plan outlined by the Committee of Fifty had been made. On May 15, however, a statement was issued by twenty-seven of the leading independent shippers in which they set forth their objections to the plan submitted by the Committee of Fifty as the basis for the organization of the Clearing House. These twenty-seven shippers stated that they could not accept nor operate under the plan suggested.

Since then, at least one of the twenty-seven signers of the shippers' statement has signed up with the Clearing House committee and accepted the plan of operation. Merton L. Corey, federal agent in charge of the membership campaign for the Clearing House, is authority for the statement that others of the twenty-seven signers of the shippers' statement are expected to sign contracts within a few days. However, no public statement has been issued since May 15 by these twenty-seven shippers as body nor by any of the signers as individuals except the one who has since signed a Clearing House contract, to indicate that they contemplate any withdrawal from the position assumed in their initial statement.

Another element which has entered into the situation is the announcement of the organization of Florida United Growers, Incorporated, a semi-co-operative organization operating under what is generally known as the "Penny Plan." This organization, headed by J. C. Penney, Walter F. Coachman and Burdette G. Lewis, with headquarters in Jacksonville, has indicated its purpose to affiliate with the Clearing House.

The Florida Citrus Exchange also has carried out its previously announced intention and has signed a contract with the Clearing House association, as has also the Mammoth Grove corporation at Lake Wales.

No public announcement has been made as to the exact percentage of the crop already signed up, although Mr. Corey states positively that the required sixty per cent will be signed before July first. He states that conferences have been held with independent shippers and that he feels confident that many of them will sign Clearing House contracts before the end of the month.

The Citrus Industry sees no reason to revise its previous statement that this matter is entirely in the hands of the growers themselves. If they believe that the Celaring House as outlined is a good thing for them, and believe it to the extent of signing sixty per cent of the crop, they will have the Clearing House—and nothing can stop it. If they do not want it to the extent of signing that sixty per cent of the crop, then there will be no Clearing House. This is purely a growers' project; of, by and for the growers. No one but the growers themselves can prevent its going over.

A NEW CITRUS AGENCY

Announcement is made of the organization, with headquarters in Jacksonville, of Florida United Growers, Inc., a citrus marketing agency with J. C. Penney, W. F. Coachman and Burdette G. Lewis at its head. In announcing the organization, the following statement of purpose is made:

"The primary aim of the Florida United Growers, Inc., under our management, will be to promote unity and harmony among the various organizations interested, by co-operating with them to the fullest degree and to develop the orderly marketing of fruit and vegetables, thus stimulating the industry by ensuring returns to the growers for their enterprise and investment.

"To insure the success of Florida agriculture three factors are necessary. Production of quality fruit and vegetables, capital to carry out the aims and objects of the Florida United Growers, Inc., and, above all, efficient management. The first of these Florida possesses, the other two can be provided by the new co-operative organization.

"To the producer is assigned the task of producing, the activity to which he is accustomed, the marketing end, the orderly and profitable disposal of the product, is the business of the Florida United Growers, Inc., thus relieving the grower of the problems of selling and freeing him from competition with his fellows."

LOOKING TO THE FUTURE

The time is coming when citrus growers will need something more than a statewide clearing house or statewide organization of any kind.

When the thousands of acres of young Florida groves come into full bearing, when the Texas groves fully hit their stride, when Arizona grapefruit production reaches its peak, the citrus growers of every citrus producing section of the United Staates will need a national commodity organization to act as a clearing house in controlling distribution and in otherwise meeting the problems of citrus growers purely as growers—not as growers of any one section.

We shall then need, even more than now, standardization of grade and pack, supervision of distribution and commodity advertising which shall have as its purpose the increased demand for citrus fruits regardless of point of origin. When production on the Pacific Coast, in Florida and in the Rio Grande Valley approaches the saturation point, we shall be forced to see the folly of fighting among ourselves and trying to belittle the other fellow's product, and will be faced by the necessity of getting together and pulling together to increase consumption to a point in keeping with the increased production.

Some of the wisest students of citrus topics in California and Texas realize this need and are now preaching a closer affiliation of the the growers of all sections.

EXCHANGE RE-ELECTS OFFICERS

At the annual meeting in Tampa on June 7, the entire executive staff of the Florida Citrus Exchange was unanimously re-elected for another year. These officers include: E. L. Wirt, president; Capt. F. C. W. Kramer, first vice president; John A. Snively, second vice president; H. C. Tilden, third vice president; C. H. Walker, fourth vice president; C. C. Commander, general manager; Gen. A. H. Blanding, production manager; George A. Scott, sales manager; John Moscrip, advertising manager, E. D. Dow, traffic manager; O. M. Felix, secretary; W. T. Covode, cashier, and Judge William Hunter, attorney.

The annual report shows that the Exchange price averages are among the highest in its history and that up to May 10th, the Exchange had returned to its sub-exchanges more than $12,000,000, an increase of over $3,000,000 more than had been paid at this time last year.

TEXAS GROVE COSTS

The owner of a four and one-half acre grapefruit grove at Donna, Texas, writing in the Valley Farmer of Mercedes, Texas, gives an itemized statement of the cost of his three-year-old grove.

According to his statement, which includes every item of cost, including original cost of land, nursery stock, planting, cultivation, water tax, state, city and county taxes and interest, the cost of his grove at the age of three years is $907.07 per acre. This includes an original cost of $425.00 per acre for the land and $70.00 per acre for the trees. Inasmuch as this grove is located within the city limits of Donna, where taxes are high, it is probable that the figures given represent the high cost of raising groves to the three year age in that section.

That this party considers his investment a good one is shown by the fact that he states that he has just refused an offer of $1.750.00 per acre for his grove.

It is only fair to state that other growers in the Texas field have given it as their opinion that the cost of bringing a grove to the close of the three-year period ranges from $1,000 to $1,500 per acre, but the Donna grower is the first one, so far as we have been able to learn, who has backed his statement with an itemized schedule of costs.

The fact that investors stand ready to pay from $1,750 per acre up for three-year-old groves is evidence that the growers themselves are not the only ones who have faith in the future of citrus culture in the Rio Grande valley.

The season of 1927-28 is about to close with a record of the best average price ever received for a crop of Florida citrus fruit. Let's determine now, that so far as in us lies, next season shall at least equal this. Proper attention to the growing of quality fruit will help.

No grower can safely neglect his fertilizer and insecticide program.

CITRUS COMMENTS

—BY—

Charles D. Kime, Orlando, Florida

This department is devoted to furthering horticultural interests of Florida. Letters of inquiry, discussion or criticism will be welcomed.

GROVE DEVELOPMENT FROM A REALTOR'S VIEWPOINT

Business Relationship

Citrus is one of those industries of the State that has given rise to community and town development. To a truly startling extent our town and trading centers are still dependent on the welfare of the industry. The condition of the industry largely generates the state of mind of the sections affected. Given good prices and a good crop, optimism prevails. It is impossible to feel pessimistic when grove owners have money to spend; when the packers and shippers have just had a profitable season and when all of the labor affected by this prosperity can trade in our stores and buy the goods they want. From the butcher and baker, the whole list of commercial activity including life insurance and taxes, we hear that business is picking up.

Where the prosperity of one group so directly and so quickly affects the welfare of all others, our attention is challenged as to its condition and possibilities. Some knowledge concerning it is all the more vital to those directly concerned in real estate transactions.

General View of the Industry

There are many sections of the world that can produce citrus, but there are none so favorably located with reference to our own markets or world markets. We have a decided advantage in shipping time over California, Texas, Arizona and Porto Rico or over foreign countries such as Italy, parts of South America, Spain, Cuba or Australia.

We have a decided advantage in coast line and ports from which fruit shipments can be made. The coastal sections of the United States are easily accessible, through coastwise trade routes and the interior sections through the port of New Orleans can also be reached. This water versus rail shipping is just coming into public notice and assuming true importance.

We can produce many excellent varieties to perfection. Their juice content is higher and their flavor as good as the best. There is ample reason to believe that some of our varieties will always demand a premium because of both flavor and appearance, which are the two important fruit quality factors affecting sales.

We have a monoply on tangerine production, King oranges and produce the bulk of grapefruit. Our round oranges properly grown will compete in any market with fruit from any other country.

Published figures from all sources indicate an increase in consumption since 1919 when 38,882 total cars loads were consumed, of 20,669 car loads or about 7,500,000 boxes. Or an indicated increase in consumption of 1,000,000 boxes per month for that part of the year during which the fruit was marketed. This increase really occurred during the years 1919 to 1923, a period of five years and since then has remained constant through another period of five years, giving the country a total period of ten years in which to absorb the added production. We have had the last five years to absorb and learn to market this fruit, and it was absorbed and marketed at a profit. The indications all point toward a greater consumer demand throughout the country and better marketing facilities in Florida, is a matter of statistics alone we can reasonably draw the conclusion from the above that after this five year period just past is allowed for absorption of the increase, we should be on the eve of profitable marketing of still larger quantities. Actual countrywide conditions indicate this to be a fact.

As a matter of fact we can and are increasing production by new plantings exceeding all other sections in the rapidity with which this is being done. We are doing this, first, because we have good land on which fruit can be grown, and second, because the country markets and world markets seem to be ready for this fruit.

We feel safe in doing this because: There has been no increase in actual production since 1923.

Good quality fruit has sold at a profit each year, including 1923 and 1924.

The population of the country has increased enormously.

Marketing facilities are improving.

Advertising is being studied from a more common sense attitude.

There is a decided increase tendency in consumption of fruits and vegetables throughout the country.

Citrus fruits are proving to be one of the most important links in health of the individual from the time before birth until death.

Citrus fruits offer the most interesting and challenging story for the advertiser of any item in the world today. The surface has not been scratched. The country is ripe for health propaganda based on facts from results secured by our best laboratories and hospitals.

Florida is days nearer the markets of the country, either by rail or water than Texas, our nearest competitor, or Arizona or California.

In time freight rates will have to be proportional to the distances our fruit is hauled, which change, when made, will give us further economies comparable with rates from other sources. At present we pay a subsidy in the guise of an unfairly high rate.

We must have more production to to profitably support by-product plants, and juice extraction factories. With our present production, such plants cannot be supplied with fruit for their continued operation during our shipping season.

We are cutting cost of production somewhat from year to year, and along with this are improving quality and appearance through better cultural methods, more technical knowledge and cheaper sources of fertilizer, especially nitrates.

The industry is further protected through a system of nursery inspection under State supervision, which insures the grove owner clean nursery stock at the time of setting, and

further protects him in the ability of the nursery inspection department to trace out the source of any diseases or serious pests which might be introduced through their system of record keeping.

In co-operation with the United States Department of Agriculture, there is also maintained a State Plant Quarantine Service, which service is effective in preventing the introduction of dangerous insect pests and diseases on plant materials that are brought or shipped into the State. The value of this service can be realized when one considers the damage that is now being done in this country by the Japanese Beetle, the Corn Borer, the Mexican Bean Beetle, and other introduced insects.

In considering the sale of an actual property, the realtor is faced with two big classes of individuals, the resident and non-resident. Among these two classes there is, of course, the usual variation in personal ability and financial rating, but, insofar as grove properties are concerned, there seems to be a distinct difference in their handling by a resident owner or by a non-resident owner. The former is able to give personal supervision. The non-resident must depend on local care-taking organizations. It seems a mistake to sell a non-resident a property in a section where such reliable supervision is not available.

Important Points About a Grove

LOCATION. The surroundings of any property usually decides the purchase. The most important points in this connection largely consist of soil type, isolation, nearness to packing house, accessibility by road, variety of fruit and stock on which it is planted, and whether or not the section may be considered a cold area.

CARETAKING. Small properties in five and ten acre units, cannot be cared for as economically and are much less remunerative than thirty acres and up. The smaller the property the more necessary it is that the owner do all of the work, as he cannot afford to hire any amount of it done. Large groves under single management can be and are economically cared for only so long as the unitholder permits such a caretaking plan to continue. Such a plan, however, is feasible and economical.

KNOWLEDGE NEEDED: The average seller of a grove will usually have very little technical knowledge, and such things can always best be left to resident individuals in the

Continued on page 26

Attention! Citrus Growers

HARDIE SPRAYERS

NIAGARA DUSTERS

THE SUREST WAY to increase the revenue from your groves is to improve the QUALITY of your fruit. It is much more profitable to produce a smaller crop of high-priced fruit, than a large crop of low grade fruit.

This is easy, if proper care is taken of the trees and the growing fruit. Those growers who are most successful and prosperous have secured best results from spraying with

EMULSO THE BETTER SPRAY

FREE

We have prepared and will supply without charge, a spraying schedule which is invaluable for growers. Write for your copy today.

It is easy to mix, simple to use, spreads readily and lasts longer. Emulso is without doubt the most efficient and economical method of overcoming citrus pests.

Peninsular Chemical Co

CROP AGRICULTURAL INSECTICIDES PROTECTION

ORLANDO Florida TAMPA

Warehouses At:

Ft. Myers Tampa Plant City Lakeland
Winter Haven Lake Wales Frostproof Sanford
Winter Garden

Oil as insecticide

Use of Oil Emulsion in the Citrus Grove

By Gilman A. Drew, Eagle Lake, Fla.

Because both are alive, and living material has great similarity wherever found, it is difficult to find sprays that will control insects without injuring the trees on which they live.

Many petroleum oils are very effective in killing insects, especially the smaller ones, and it is possible to apply some of these oils so the insects will be killed without greatly damaging the host plant.

Tree damage from oil sprays may be caused either by toxic substances contained in the oil, or by what is probably a mechanical action often referred to as smothering.

Crude petroleum oils, and many of the more or less refined commercial oils, contain toxic substances that act directly on the tissues of the plant. The toxic substances are said to be for the most part, unsaturated hydrocarbons. They may be removed by special treatment with very strong sulfuric acid. Their action on plant tissues is comparatively rapid so the damage is visible soon after the application. Volck has reported that sulfur in oil, even minute quantities, is injurious to citrus trees.

Although the toxic substances may be almost entirely removed as is the case with the highly refined medicinal oils, and Volck, deOng and others have shown they will give satisfactory insect kills, there seems to be a slow action on the trees that make their use somewhat questionable.

To be effective an oil that is not toxic must be heavy. It evidently kills insects by smothering them. When insects are treated with such oils, the spiracles and portions of the trachae, are filled with the oil and the respiratory system is completely blocked. The oil must be viscous so it cannot be expelled by the insect, and relatively non-volitile, so it will keep the respiratory tubes plugged for a sufficient time.

Woglom and others have reported cases of shy blooming and retarded maturity of fruit that seem to be traced to spraying with oil emulsions, especially with emulsions made with heavy oils, and Wilson has found there is a change in composition and flavor of fruits under certain oil spray conditions.

Completely formed oil films over the surfaces of the leaves must greatly interfere with transpiration, which governs the flow of sap, and may have considerable to do with the exchange of gases between the leaves and the atmosphere. There seems to be little available information on the solubility of gases in pure petroleum oil. Oxygen is reported to be readily soluble in Russian mineral oil but I have no information on the solubility of carbon dioxide in this oil. Carbon dioxide is readily soluble in benzine, one of the fractions of mineral oil.

Perhaps an oil film is not a very serious hinderance in the exchange of gases. This is a matter to be determined by experiment. Simply because a substance is capable of absorbing considerable quantities of certain gases is not insuring that a film formed over a leaf with such a substance may not seriously interfere with the functions of the leaf.

If transpiration is stopped the flow of sap is blocked. Without a continual supply of sap the leaves are deprived of a portion of the materials used in metabolism. It is evidently true that water and carbon dioxide furnish all the material necessary for the formation of sugar, but without chlorophyl and sunlight there is nothing doing. Unless the cells and chloroplasts are kept in good metabolic condition, which cannot be without a supply of certain mineral salts that are furnished in the sap, photosynthesis will stop.

There is no reason to believe the stomata, as small as they are, would escape being covered by an oil film. but the term breathing pores that is often appiled to them is somewhat misleading. They probably are of service in the exchange of gases but there must be continuous exchange all over the surface of the leaf regardless of stomata. Entirely submerged water plants have no stomata but the exchange of gases and photosynthesis is marked in them as in other green plants. Any film that covers the leaves must be regarded with suspicion even if the stomata escapes.

Whether the insects are killed by suffocation or by toxic substances it is necessary to form a film. In one case it must be persistant for a considerable time to insure smothering; in the other case it is needed only for a period necessary to sufficiently treat the insects with the toxic substances.

The lubricating oils are more useful insecticides than any other petroleum product and at present the general, but not universal practice is to make emulsions with medium or light lubricating oils from which part but not all of the toxic substances have been removed. The plan is to kill the insects with toxic substances, held in place by a satisfactory oil film, and to have the toxic substances dilute enough and the film volitie enough to avoid serioously injuring the tree.

It is doubtful whether and oil spray can be applied without injuring the tree to some extent, but insects and sooty mold will injure the tree if they are allowed to remain, so it becomes a question of expediency.

Theoretically, and this seems to be borne out by observation, injury to trees depends largely on their vigor. A sickly tree is more easily injured than one in good health. Trees that are not vigorous because of drouth, cold, scale, or hunger are more subject to damage by sprays than clean vigorous trees. On the other hand it seems that trees recently sprayed have their vigor reduced so they are more subject to damage by cold than trees not recently sprayed. It becomes a matter of judgment when sprays should be applied for trees devitalized by scale are more subject to damage by cold than clean trees. It makes little difference what causes the lack of vigor, such trees are less able to stand adverse conditions.

Oil is emulsified so it may properly be spread on the tree. Emulsions vary in stability and in the size of the oil droplets in them. Generally speaking these characteristics are related, as emulsions with minute droplets. There are other differences in emulsions but they need not concern us now.

At first thought one is inclined to expect better results from stable, finely divided emulsions. This seems

Continued on page 21

BLUE GOOSE NEWS

Monthly News of American Fruit Growers Inc. *Edited by The Growers Service Department*

VOLUME 2.—No. 7 ORLANDO, FLORIDA, JUNE 1, 1928 PAGE 1

SELLING REQUIRED TO EFFECT SALES

Selling should, and must, be the primary object of any sales organization which expects to obtain substantial success in its field, is the opinion of Frank L. Skelly whose nineteen years service in connection with the marketing of Florida fruits give his opinion unusual value.

During his long service for Florida, and in his experience in the produce trade prior to taking up this work, Mr. Skelly has had abundant opportunity to observe the success or failure of many organizations which have come and gone or have endured in the field of selling perishable foodstuffs.

He gives it as his opinion that because of the inevitable variation in quality and character of naturally grown products, their sale in the markets really requires a higher degree of alertness and salesmanship than is necessary in the presentation of manufactured products uniform in character. He has witnessed the failure in the perishable field of numerus men who had come to it rated as stars in the selling of manufactured products, in good part because they became confounded by the variations in the products they represented for sale. On the other hand, a really star salesman of perishables can be expected to sell most anything else successfully.

Also, the working of the law of supply and demand is most rapid just in the proportion that the product is most perishable, and not subject to successful storage and witholding from the markets in times of excess supplies. This operates to make impossible the more or less steady markets, with comparatively steady price levels, which are a feature of the handling of grains and other non-perishable food products. The result is to produce more bartering and bickering between buyer and seller in the perishable foodstuffs field than obtains in almost any other field of modern merchandising. All these combine to require of the perishbale foodstuffs salesman a high degree of alertness and individual reourcefulness, to be capable of holding his own with the shrewd and careful buyers with whom such a salesman must deal.

It is further necessary, in Mr. Skelly's opinion, that such salesmen

Continued on page 2

FRANK L. SKELLY IS VERY GREATLY IMPROVED

As this is written reports are that Mr. Frank L. Skelly of the Orlando Division of the American Fruit Growers Inc. is now improving rapidly in the Jacksonville hospital to which he has been confined for some time by a severe illness.

Mr. Skelly's long connection with citrus affairs in Florida gives him a vast circle of friends among the growers and shippers of the state, who will doubtless be delighted to know that he is now well upon the road to recovery.

NEW ORGANIZATION JOINS RANKS OF BLUE GOOSE

Caloosahatchie Valley Growers Inc. is the name of the new packing and shipping organization at Alva in Lee County, whose shipments will be marketed through the American Fruit Growers Inc.

The new organization takes over the packing huose of the old established Alva Citrus Growers Association, which has been disbanded; and will handle the fruit of a number of growers in addition to that of many former members of the old organization. Officers of the new body will be selected shortly. The packing house management will be in the hands of H. S. Parkinson, whose own experience has been considerable and whose father Edward Parkinson prior to his death two years ago was long one of the most important citrus factors in Lee County.

UNUSUAL CITRUS SEASON NOW COMING TO A CLOSE

The old understanding among citrus market men, that citrus fruit prospects must not be considered solely of themselves, but with relation to prunes, apples and all other competitive factors if true light is to be obtained upon any situation, has well been exemplified in the shipping season now coming to a close in Florida.

A combination of favorable circumstances, involving reduced citrus yields in both Florida and California, a short apple crop and other favorable factors, coupled with perhaps the most intelligent and coordinated handling of Florida citrus shipping yet to be developed, resulted in what is undoubtedly the highest average price level for the Florida crop of oranges and grapefruit in the history of the industry here.

In the instance of the handlings of the American Fruit Growers Inc. carefully compiled figures show that its entire handlings of the crop averaged the highest price this organization ever has obtained upon any whole seasons operation for growers of fruit.

This includes oranges, grapefruit and tangerines, and is an actual average of sales with all expenses deducted. A larger percentage of Valencias and tangerines among the shipments handled would have added considerably to this average, but the holdings of growers affiliating with this organization do not run heavily to these. The figures exhibit the unusual price results which have attended the season's selling for Florida citrus growers.

Well posted fruit men doubt if ever any fruit producing area anywhere has been able to show anything like similar financial results to those which Florida orange and grapefruit growers have obtained during this season.

Florida oranges were of desirable

Continued on page 3

Adv.

BLUE GOOSE NEWS

OFFICIAL publication of the American Fruit Growers Inc., Growers Service Department, published the first of each month in the interest of the citrus growers of the state of Florida.

EDITORIAL ROOMS
502 Yowell-Drew Building
ORLANDO, FLORIDA

PROPAGANDA

It is doubtful if even World War days witnessed the output of propaganda in equal volume to that which recently has been put forward in Florida. Beginning with the definitely traced railroad propaganda which began about two years ago, and which was devoted to convincing the public that the marketing of Florida citrus fruits was a haphazard and badly handled undertaking, the volume of such propaganda continues undiminished.

The most recent propaganda finds its way to the desks of the nawspaper editors of the state through the mails from an unrevealed source. It takes the form of endless stories, each of which is concerned with the remarkable achievements of some commodity cooperative marketing organization located a long distance away from Florida. In each of these it relates how the growers of those particular commodities banded together, brought order out of chaos and have lived happily ever after, presumably in the enjoyment of a civic harmony and a financial prosperity calculated to make them the objects of envy of all growers outside their particular fold.

It seems reasonable to believe each of these stories has been prepared for publication either in Florida or at some other point remote from the scenes of the actual operations described, else why omit from them all mention of the frequent reorganizations and revampings which have attended the career of certain such organizations. There is a rather notable absence of all information save that which bears upon the bright side of such undertakings.

The American Fruit Growers Inc., because it has handled the sales of their products in the markets, enjoys the confidence of certain growers' cooperative shipping organizations; and in turn has confidence in them. The American Fruit Growers Inc. is friendly to cooperative organizations as a class.

We cannot avoid some wonderment, however, as to the reason for this newest propaganda. We also fail to understand the selection of certain of the undertakings which are thus so highly praised. There are certain quite successful cooperative shipping organizations, the truthful details of whose operations with a careful analysis of the reasons for their success would make really interesting reading for Florida growers. Why not present these?

SELLING REQUIRED TO EFFECT SALES

Continued from page 1

in turn be directed by executives possessed of accurate knowledge of the conditions which daily confront the active selling men, plus accurate knowledge of conditions in the field of production which affect the particular product offered, and likewise, the competitive offerings to be encountered.

A genuinely effective selling organization, handling perishables upon a large scale, therefore should be composed of merchandising and selling experts throughout. True and accurate accountings are, of course, most necessary, but accountings and all other subsidiary functions must be duly subordinated to the real job of selling, if the work of selling is to be done properly and well.

One of the chief reasons for the failure of some of the larger organizations which have come and gone, is held to be the failure of these to accumulate a sufficient personnel of real salesmen, either in the field of active selling or in the direction of the active salesmen. Simply to put out and to call him a salesman because he is calling upon the trade is not sufficient unless that man actually is a true salesman, with the proper mental and physical equipment to make and hold friends and at the same time to effect satisfactory sales in sufficient volume to earn that title. The same idea must be followed in the selection of sales executives, whose positions should depend solely upon their capacity for results and must not be dictated by any other considerations.

In a large selling organization efforts, of course, must be coordinated, but the tendency to accumulate undue overhead expenses in that connection is held to have been responsible for the lack of success of a number of attempts in the perishable field. Unqualified executives, or too many qualified executives, can result in boosting overhead expenses beyond their rightful level.

Given a fully organized and properly functioning sales organization in full swing, there must be constant attention to holding it strictly to the line of intended endeavor. For instance, in the case of the American Fruit Growers Inc., there have been constant temptations offered to step aside into the field of canned products or other things more or less affiliated with its real line of endeavor. It has been necessary to reject all such temptations, with the thought that the successful handling of so large a volume of perishable fruits and vegetables requires all the time and best thought of the corps of experts which directs its operations, and that any effort expended in another direction could only result in lessened efficiency in its real work.

There must also be strong and capable direction of any large organization of salesmen, to the end that efforts be continuous and productive, and to the end that "organization politics" do not creep in. Rewards for service must be strictly rewards for successful selling, if successful accomplishment of sales is to remain the main object of the organization and of each of the individuals who compose it.

Then a sales organization, like any other commercial or any military body, must be continuously in service if it is to be most effective in its operations. Omitting considerations of the expense seasonally, even though such expense is no small item for consideration, it is rather naturally to be expected that discipline and the ability to work together advantageously will be found most highly developed in an organization which is closely bound together, week after week from one year's end

Adv.

Orange Juice for Babies

A chemical change which results when orange juice is added to cow's milk causes very fine curds to form, which are more easily digested by the infant than plain cow's milk. The addition of orange juice may be started as early as the second or third week of life and has the advantage of introducing the vitamins which promote growth and prevent the development of scurvy. An ounce of juice to a pint of milk is the proportion that has proved to give the best results, according to the experiments of the doctors.

to another by the common tie of continuous mutual effort.

UNUSUAL CITRUS SEASON NOW COMING TO CLOSE

Continued from page 1

quality and consistently outsold California oranges in the principal markets practically throughout the season. Grapefruit met with favor from trade and consumers, and even late bloom grapefruit, excepting that with a strong tendency to "sheepnose," brought satisfactory prices once the markets were clear of early bloom grapefruit. The only flaw in the grapefruit situation developed in the loss of the North Pacific Coast ports grapefruit business to California, through Imperial Valley grapefruit moving by water to these points at rates which made Florida offerings practically prohibitive in price by comparison.

The better understanding and greater concert of action among Florida citrus shippers undoubtedly was productive of much good, even the total shipments for the season considerably exceeded the estimates which earlier were put forward quite freely.

Growers and shippers now turn eyes toward next season's activities with confidence. Several of the favorable factors which influenced this season's operations apparently will be helpful again. It is too early yet for accurate estimates from any section to be available. Such guessing as is being done, however, is on the side of optimism for Florida's situation. Premature or incomplete "estimates" however are in growing disfavor; and many have expressed satisfaction that the U. S. Department of Agriculture will probably withhold its estimates until such time as to give them real value. Already Florida oranges and grapefruit are beginning to size up well on the trees, an admitted favorable sign for good conditions in the earlier part of the shipping season.

Grove values have advanced, and a considerable number of transfers of grove property have been made at good prices in the face of a flood of "bear" propaganda. Nothing could more truly reflect the confidence with which the growers look forward to next season, and to the future.

MILLION PEACH TREES LOST THROUGH COLD

The best information obtainable from official sources indicates that fully 600,000 peach trees were pulled up after last season, and it is probable that a half-million have died from cold injury since the first of the year. This means that altogether a million or more bearing trees have been destroyed since last season. Some young orchards have come into bearing since last year, but they have been mainly early varieties, and it is evident that the early varieties will amount to only a small proportion of those which have been lost since last season.

Generous Uncle: Have you got a dime bank, Willie?

Wise Willie: Nope, but I got a bill fold.—Reserve Red Cat.

Mother: Why do you think my rolling pin isn't much good?

Johnny (heavy reader of the funnies): Because it doesn't say "Pow" when I hit baby over the head with it.—Ollapod.

Adv.

UNIFORMLY

THE BEST

Trademark Advertising

Why is the American Fruit Growers Inc. the one successful organization of its kind in the nation field, when imitation has been plentiful?

The items of management, personnel, a square deal, progressive methods and numerous other things all enter in, of course, but the real answer is found in trademark advertising.

The Blue Goose and AFG trademarks, their development, and their present high place in the confidence of trade and consuming public alike, are fundamentals in the outstanding success of this organization.

Efforts of imitative nation organizations to popularize a wide variety of brands or trademarks from different sections of the country by the aid of small amounts of tradepaper advertising have obtained small effect upon the trade and none upon the consuming public.

The great volume of non-competitive fruits and vegetables arriving in the markets under the Blue Goose and AFG trademarks, over forty thousand carloads each calendar year, plus carefully calculated advertising and merchandising effort, give these trademarks a place in the public mind which spells profits for each grower whose product is distinguished by the appearance of one or the other of these signs of quality upon it.

American Fruit Growers Inc.

Orlando, Florida

DEPENDABLE AFG QUALITY

Adv.

USE OF OIL EMULSION IN THE CITRUS GROVE

Continued from page 16

not to be the case. Griffin, Richardson and Burdette have shown quite conclusively, it seems to me, that a better kill is had by the use of a comparatively unstable emulsion containing relatively large droplets of oil.

When spray is thrown on leaves until they are thoroughly wet, part of the material runs off. If the emulsion is very stable like some mineral oils the drip analyzes practically the same as the original spray. If the emulsion is less stable, and especially if the oil droplets are relatively large, analysis shows much less oil in the drip than in the original spray. They suggest this may be in part an electric phenomenon. Small divisions of matter, atoms or groups of atoms, carry electric charges. These charges are constantly positive or negative according to the substances. Moore has found that the surfaces of leaves carry negative charges. Oil is also charged negatively. As electric charges are surface phenomena and the surface is increased by dividing a given mass into small particles, it follows that the induced charge in a very finely divided emulsion would be greater than in an emulsion with larger oil droplets. As like charges of electricity are repellent it seems possible, as pointed out by Griffin, Richardson and Burdette, that it would be more difficult to form films on leaves with finely divided emulsions with the greater charges, than with the larger droplets with the smaller charges. This, combined with the relative unstability of the emulsions with the larger droplets, may be the explanation. At any rate less oil is lost and better films are formed with the larger droplets and the relatively unstable emulsions.

Here again it is necessary to choose. The emulsion must have sufficient stability to be easily handled, and the droplets must not be so large they will smear rather than form thin films.

Potassium soap oil emulsions serve the purpose well when soft water is available. The oil droplets are relatively large, generally from 8 to 10 microns in diameter, and the emulsion is sufficiently stable, so it may be kept in the stock solution for months. Such soap emulsions are not satisfactory when used with hard water unless a stabilizer is added. This may be done shortly before spraying but it adds a real difficulty when dealing with inexperienced laborers.

Nothing can spread better than a good soap emulsion, and spreading is very necessary in forming a satisfactory film.

For some months we have been making our own oil emulsion. We have soft lake water and use a cold mixed, potash, fish oil soap, lubricating oil, emulsion. We find it much cheaper than purchasing commercial emulsions, and the results are certainly as good as we have ever had.

In making the emulsion we use the well known formula, oil two gallons, water one gallon and caustic potash fish oil soap two pounds. The actual amount of soap may not correspond exactly for the actual soap in different samples of commercial fish oil soap is quite variable. Van Slyke and Nrner found some years ago that the actual soap in samples of fish oil soap purchased varied from 14.9 to 59.27 per cent. They also found that in two samples from the same manufacturer, representing different lots of the same brand of soap the percentage varied from 24.06 in one to 46.28 in the other.

We make our own soap. We use the cold mix process. We have rigged up an old mower Pitman shaft with a pulley so it can be run with an engine. The Pitman hangs down and is connected by an iron rod with a dasher that carries a number of cross pieces. The dasher works in a covered barrel. A hole in the cover is provided for the iron rod and a second hole is provided for a small pipe that leads from a tank that receives the charge of fish oil.

We pour 3.75 gallons of water into the barrel and add 15 pounds of caustic potash. Caustic soda should not be used. It makes a relatively hard soap that is not as satisfactory as the other. The caustic potash heats the water nearly to the boiling point and the resulting solution is strong. The dasher is now connected, the barrel covered and the engine started. Into the oil tank that is connected with the pipe that leads through the second hole in the cover, is poured 7.5 gallons of fish oil. It is important that the fish oil be added slowly and that agitation be continuous and vigorous. Fish oil soaponifies readily by this process but cottonseed oil, tallow and many other fats require heating. The cheap, dark pressed, fish oil is entirely satisfactory for this soap. It contains more free fatty acids than the light pressed oil but as the process of making soap requires the splitting of the original fat into glycerine and fatty acids and the recombining of the fatty acids with the caustic potash, it makes no difference whether part of the fatty acids are free in the original oil or not.

The churning process is continued for about an hour and a half. The soap, which is then quite thick is diluted with 11.25 gallons of water and the churning process is continued for a few minutes to insure proper mixing. If the weather is cool this water should be warmed before it is added. If cold water is added the soap is likely to harden in flakes, that may require heat to liquify.

The water is added to the soap so the stock solution will remain entirely liquid at all times. This makes it convenient to handle. In this form it keeps for long periods, months at least, without deterioration. The quantities given were determined by the size of our barrel and the fact that caustic potash is frequently purchased in five pound tins. The proportions used are water one quart, caustic potash 1 pound, fish oil two quarts.

For making the emulsion we use an old sprayer engine and pump. The pump is placed on a low foundation so it may have its suction pipe, lower than the barrels supplying it. The suction pipe leading to the pump is branched. Each branch is provided with a gate valve and leads from the bottom of a barrel. The pump discharges through an iron pipe, that carries two spray nozzles, into an elevated barrel. For convenience this pipe carries a pressure gauge. The old Bordeaux nozzles are convenient as they are cleared of obstructions by turning the lever over.

A six foot piece of 1¼ inch pipe is attached to the bottom of the elevated barrel by nipple and elbow so it may be swung into different positions and discharge into suction or storage barrels. This pipe carries a valve near its outer end.

Starting with the valves on both suction pipes closed, one of the suction barrels is charged with 3.75 gallons of the soap solution, 8.25 gallons of water and 24 gallons of lubricating oil. We use Gulf Paraquen oil. It is similar to the Standard Red Engine oil. We use it simply because it seems to serve the purpose, is easily obtained here and is not expensive. I do not suppose it possesses any special merit over other oils of the group. Green finds that the effects are the same whether the oils

Continued on page 24

THE GROWERS' OWN PAGE

This department is devoted to the growers, for their use in giving expression to their views and a discussion of growers' problems. Any grower is welcome to make use of this department for the discussion of topics of interest. The only requirements are that the articles must be on some subject of general interest, must be reasonably short and must be free from personalities. The editor assumes no responsibility for views expressed, nor does publication imply endorsement of the conclusions presented.

BROTHER BILL JR.s LETTERS

Dear Jim:

In my last letter I retold you some of the very important things oranges do for the people who are our market, according to their own admission. The next time I write we will continue the same subject of "oranges from the physicians' view point", and I will tell you some more of the things they told me. Just now, though, I want to call your attention to a phase of the citrus industry which is seldom thought of and never fully appreciated, although upon its successful consummation rests the entire future of the business and its continued existence.

The State Plant Quarantine Service is the organization I want you to think about and realize its full importance; both from the standpoint of its value to you as an individual grower and as the keystone upon which the citrus industry survives in Florida. Such an important part does this Service play that were it to fail for even a brief period in its ever-lasting vigilance I very much doubt if the industry would long survive the results. Take your map and you will see to the south and east of Florida a group of islands; while lying to the south and west of these islands are only short distances of open water to Central and South America. Color all of this territory a bright, vivid, solid red and remember it because it is just as fraught with danger to every citrus grower in the State of Florida as smoking in a powder magazine.

In the past, communication was slow and difficult to these "pest pots." With the spread of good roads and the operation of huge automobile ferries between Florida and Cuba, and Cuba and the other islands and Central America; the establishment of air lines from Florida to all this territory; and the increase of travel, literally brings these "red areas" right into our own front yard.

All this territory you have marked has insects, which, if they gain entrance to Florida, will carry an aftermath of ruin in their wake which it is unpleasant to picture. Suppose we try to visualize it as it might easily be.

Can you imagine a Florida without a citrus industry, grapes or any thin skinned fruits? A Florida whose once prolific horticulture was abandoned to the scrub cow, range hog and poverty? Would you care to have future histories read something as follows? "Starting about 1850 and up until about 19—, Florida HAD a rapidly developing and thriving citrus industry. About 19—, certain insects from the tropcis made their appearance and the industry rapidly declined, until now only a few oranges and grapefruit are grown for local consumption."

Now Jim, this is no exaggeration. Many of these deadly enemies are being taken in quarantine. Here are four which will set you thinking when you know how damaging they are:

1. Mediterranean Fruit Fly.
2. West Indian Fruit Fly.
3. Mexican Orange Maggot.
4. Black Fly.

What do these insects do and how?

The first three get INSIDE the orange where it is impossible to get at them. They riddle it with nice, fat, plump, juicy, squirmy maggots or larvae. There aren't many people who care to get their meat in this form. Personally, I don't care to have mine quite so fresh and active.

The fourth is a member of the White Fly family which is nearly impossible to combat successfully. The Black Fly has such prodigious sucking ability that it will curl and shrivel the leaves and kill the tree.

You must keep in mind that an introduced pest is always worse in its new location than in the "old home grove",because it usually leaves its enemies behind when it travels.

What keeps these pests out? The State Plant Quarantine Service! With

June Plantings

For those sections of the state where June citrus plantings are indicated we offer for spot delivery a good selection of varieties, all thrifty, desirable stock. To others we recommend early reservations of Fall planting stock.

We can furnish excellent trees on any generally used rootstock, but those on other than sour orange roots are sold at substantial discounts below the prices at which the same quality of sour stock is sold.

Send today for our price list, and reserve early the trees you require for Fall planting. Our quarter of a century of successful experience in this location is yours to command.

Lake Nursery Co.

Capital $300,000

Oldest Sour Orange Nursery In Florida

Leesburg, Florida

the growth of traffic to these islands, this service has had to operate with the same meager force that it had before the growth of traffic and could not give the strict attention they should to many points. Therefore it is "just fool luck" that under these conditions some or all of the pests did not get into Florida.

Remember too, Jim, that the traffic will steadily increase in the future even more rapidly than in the past.

What is the Plant Quarantine Service? It is a pitifully small, underpaid, overworked, nonpolitical group of State employees, who place thier work and their personal sense of responsibility to the growers and farmers of Florida above everything else. They are as fine a group of men as you will meet.

What is their job? To inspect every freight car, automobile, boat, aeroplane, piece of baggage and person coming into Florida from outside of Florida's borders to see that they do not bring anything which would carry any one of the multitude of enemies that are outside our boundaries waiting for just one chance to get in. Always with the knowledge that if they miss the bouquet the pretty girl at the end of the inspection shed carries or the half-dozen oranges tucked in the corner of that nice old gentleman's suitcase, it may cost the farmers and growers of the State millions of dollars, if it dosen't put them out of business entirely.

I said before that it is a nonpolitical organization. This fact makes it the football of the politicians who go to Tallahassee and they do with it about as they choose, with a sangfroid worthy of a Nero. There is no "Pork Barrel" connected with the Service for the politicians to dip their fingers in, and so it is just possible they deem it a poor place for them to put the peoples' money. The fact that it is a preventive service is one reason it is so hard to make people realize its importance.

It isn't a physical thing that any politician can firmly build for his own pet locality so he can go back to the "home folks" and say: "See what a great man I am, I am your friend. I gave you this great piece of work". Nearly all politicians suffer from an acute case of eye trouble—"I this," and "I that".

What can the growers and farmers of Florida do to adequately protect themselves? The candidates know that any man whom these growers and farmers do not want in office will never be elected. I think each candidate to the Legislature and for the much contested office of Governor should be made to state definitely where he stands upon the matter of an adequate Plant Quarantine Service before the elections on June 5th.

Were the Plant Quarantine Service to fail, through lack of men to do the work as it should be done, the politicians would be only too quick to appropriate millions to fight a losing battle. It would be too late to find new plant introductions in a futile effort to slow up the inevitable crash. We need the right man elected first and a suitable appropriation program planned and put through after that.

Shall we give, "Thousands for defense and not one cent for tribute", or millions for tribute and not one cent for defense"?

Affectionately your brother,
Bill Jr.

Mr. Newlywed Michener: And how are you getting along with the butcher, darling?

Mrs. Newlywed Michener: Fine! He's so generous too. When I order a four pound roast he always sends a five or six pound one!—College Humor.

The annual meeting of the Florida Press Association will be held in Lake Worth April 26-28. n interesting program is being arranged.

Dark Boy: What all am your name?

Ditto: Cass.

Dark Boy: Yeah, and I suppose your first one is Jack.—State Lion.

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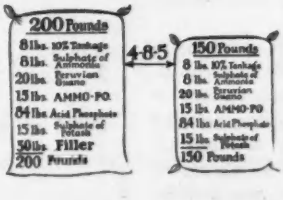
A&G NO FILLER BRANDS

FERTILIZER

The Old Way

You bought a 200-pound sack containing 150 pounds of plant food and 50 pounds of filler.



A & G Method

You buy a 150-pound sack containing 150 pounds of plant food only—no filler. You save the cost on freight, haulage and distribution of worthless matter.

Write for Our New Farm Record Book

ATLANTIC & GULF FERTILIZER CO.

C. NASH REID, President

Jacksonville, Florida

USE OF OIL EMULSION IN THE CITRUS GROVE

Continued from page 21

are from crude with paraffin or asphalt base. The water should be soft. We use lake water.

The materials in the barrel are well stirred together and stirring is continued during the first pumping.

The engine is now started, the valve to the charged barrel is opened and the material is pumped into the elevated barrel. As soon as pumping started the pipe from the bottom of the elevated barrel is swung into position over the empty suction barrel and the once pumped emulsion is allowed to drain into it, to be ready for the second pumping.

When the barrel from which the pump is drawing is empty, the valve connecting it with the pump is closed, the other valve is opened, and the pipe leading from the bottom of the elevated barrel is swung over the now empty suction barrel so it may collect the emulsion for the third and last pumping.

By using two suction barrels arranged as described there is always a charge ready for the pump so there is no delay in pumping.

When the third pumping is started, the pipe from the elevated barrel is swung over a funnel covered with cheese cloth that leads to a storage barrel.

One of the suction barrels is now empty and may receive a new charge while the third pumping of the first charge is in progress.

By having supplies conveniently arranged it is possible for one man to keep the pump busy, but the man will also be busy. He has to attend to the engine and pump, see that nozzles are clean, get barrels into position and out of the way, roll and open fresh supply barrels, transfer the pipe from the elevated barrel when needed and see to opening and closing valves as well as mixing new charges. He must not get excited or he is likely to let his storage barrels overflow and lose count when measuring new charges.

Six or seven barrels may be made in a full days work with this equipment. The cost at present prices is about 18 cents a gallon. This includes labor and material, but is based on the supposition no time is wasted in shutting down. It does not include overhead, or the time and materials necessary to keep the equipment in good running order.

A few words of advice may help others who undertake to mix their own oil emulsions.

The soap solution must be figured as water. To make a standard strength oil emulsion every gallon of the emulsion must contain two thirds of a gallon of lubricating oil. In mixing the ingredients there must be two thirds of a gallon of lubricating oil and one third of a gallon of everything else, if you are to get a one percent solution of oil by adding three gallons of the stock solution to a spray tank, of water (actually three gallons of the stock solution to 197 gallons of water.)

It is not necessary to have this concentration to get a good emulsion but if it is made more dilute the actual amount of oil will have to be calculated so the required percentage of oil will be mixed in the sprayer.

In mixing a charge do not fill your suction barrel too full. The mass will swell nearly one fourth as the result of the first pumping. This is because of confined air. It will shrink on standing, but this takes several hours, and when it is returned for the second pumping you may find the barrel will not hold it.

If you want to fill your storage barrels they must stand until the shrinkage takes place and then fill again.

The pressure will change between the first and second pumping. The confined air makes the mass elastic enough to decrease the efficiency of the pump. It is much better to have the pump fed by gravity than to try to pump the material out over the top of the suction barrel for the same reason.

Probably 40 pounds pressure is sufficient. That is the pressure used in certain experimentally mixed emulsions, but the size of the nozzle may make a difference in the pressure required. I do not think a higher pressure is objectionable if the emulsion is not pumped more than three times.

Little Boy (reading): Uncle Dinwiddie, what's a "feebly."

Uncle D.: A what?

Little Boy: A "feebly."

Uncle D.: Read me the sentence.

Little Boy: "The man had a feebly growing down on his face." And sad to say, boys, we are fresh out of wood cuts.—Yale Record.

She was only a photographer's daughter but she was well developed. —Yale Record.

There is just one way to make "Quality" Fertilizer

That is by the use of the right proportions of the high grade materials necessary to feed the trees during various stages of growth and under varying soil and climatic conditions.

"ORANGE BELT BRANDS" since the inception of our company, have been noted for Quality and the results obtained by our many customers convince us that we have been successful in our efforts to make a "better fertilizer."

Our pledge to you is that just as long as we continue in the business of making fertilizer, the high standard of Quality we have set for "ORANGE BELT BRANDS" will ALWAYS be maintained.

Quality Fertilizer for Quality Fruit

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LYONS FERTILIZER COMPANY

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FACTORY: 4th Avenue & 35th Street

TAMPA, FLORIDA

"Please Say You Saw It in The Citrus Industry"

APHIDS KILLED NOW WILL PREVENT MANY LATER SAYS WATSON

Modernizing the old adage, J. R. Watson, entomologist of the Florida Experiment Station, declares that each aphid killed now will save 90 times nine next month. A survey of the citrus belt indicates that the aphids are scarce at this time, and growers are reminded that now is the time to put in some good work against the parasites.

The dry weather and freezes of the past winter are cited as causes for the scarcity of aphids at this time. In spite of the unfavorable conditions it is found that in many sections they are appearing in limited numbers. If these first colonies are destroyed, it is probable that citrus growers will not have to resort to a general dusting program, except in the case of tangerines, thinks Mr. Watson.

The aphids now on trees can be destroyed by dipping them in a bucket of strong insecticide. For this purpose 40 percent nicotine sulphate can be used as strong as one part to 500, with two or three ounces of soap to each gallon, to act as a spreader. Derrisol of the same strength may also be used.

One citrus grower writes Mr. Watson that he carries in his pocket when working in the grove, a paper sack containing nicotine sulphate-lime dust. He keeps this sack tightly closed by means of a rubber band and whenever he sees a colony of aphids in a tree he holds the bag over the colony and gives it a vigorous shake. Either of these methods will help the grower to hold the advantage which he now has, due to climatic conditions.

Fourteen clubs in the western part of Hillsborough County won $293 in prizes at the South Florida Fair this year. The prizes were for canning, fancy work, paintings, old coin collections, and a variety of other things says Mrs. Mary S. Allen, home demonstration agent.

The latest information about the Japanese beetle is available to residents of the state who write to the State Plant Board at Gainesville, and ask for the March bulletin.

Bill: What's your brother suffering from?

Ward: Brain fever.

Bill: Oh, I thought it was something serious.—Michigan Gargoyle

Florida Products for Florida Growers

Materials of demonstrated effectiveness for each citrus insect or disease, all bearing a "Made in Flordia" trademark.

Schnarr's New Process Standard Spray Formula

The original and leading genuine Oil Emulsion for control of scale and white fly.

Schnarr's New Process Special Spray Formula

Safety combined with results for hot weather usage. Made from heavy white neutral, highly refined paraffin oil of high viscosity and medium gravity. Emulsifying materials of extra spreading qualities. Quick diffusion in water and even distribution over fruit and foliage. The perfect summer spray.
NO SPREADER NECESSARY.

Schnarr's Superfine Air-Floated Dusting Sulphur

We are now installing new equipment for producing Sulphur under the famous air-separation process. The finished product will be of extremley fine mesh, light and fluffy, working readily through any good Duster and will be superior in floating and penetration. Samples gladly sent upon request.

Schnarr's High Test Lime Sulphur Solution

Rust Mite — Red Spider

In addition, a complete line of Spraying and Dusting Equipment.

A new Price List and Catalog is yours for the asking.

J. Schnarr & Company

Pioneers in 1906 --- Leaders Still in 1928
Complete line of Sprayers and Dusters

Orlando, Florida
Winter Haven, Florida

CITRUS COMMENTS

Continued from page 15

business or to company development, as the details necessary for proper line-ups is entirely too great for one not specializing in the business.

JUDGING A GROVE FOR SALE: By listing the following points with regard to grove condition, it is not a difficult matter to determine the comparative rating of one grove with another for sales purposes. Color; Type of growth for variety; Quantity of fruit crop, if any; Quality of fruit crop, if any; Type of tree, that is, spread and height; Variety of fruit; Block size of variety; Estimated yield, i.e., whether good or poor; Some idea as to probably marketing conditions.

Cost of keeping grove in good condition.

There are other points which affect one's opinion and specific locations may add or detract from the value one would usually allow the various points in making an inspection for sales purposes, but in general the above points will give one an excellent comparative basis on which to judge the desirability of different properties listed for sale.

HOW TO SECURE BRIGHT FRUIT

By C. D. Kime

May is the critical bright fruit month.

Six million boxes will fall from fifteen cents to one dollar in price during May and June through neglect of rust-mite control. This estimate is relative but it is probably much too low.

Neglect rust-mite control on this heavy crop year during the next several weeks and in spite of their best efforts to serve us, our groves will produce a fine crop of russetts running to very "small-offs".

This year of all years we need bright fruit and co-operation in marketing this bright fruit. Exery box of off-size russets should go to the juice factory instead of competing on the northern market and depreciating price. During a heavy-crop year such competition is serious.

"Russets" can be practically eliminated and the cost is moderate. Either dusting with sulphur-dust or spraying with lime-sulphur will accomplish this. Of the two, dusting is cheaper because of the ease and quickness of the application. The cost of material is about the same when figured on a tree basis. The difference in cost of applying however, will make a dusting application about one-third of the cost of a spray job. This is true even in small trees where only one-fourth to one-half pound of dust is needed. Large seedlings can be dusted at a much lower cost than the estimated one-third part of a spray job.

SUMMARY:

1. Lack of rust-mite control where it is needed will depreciate a crop fifteen cents to one dollar per box.
2. Russetts average smaller than brights.
3. Dusting and spraying are effective. Dusting costs roughly one-third of a spray job.
4. Dusting can be repeated quickly and at a low cost. Spraying cannot.
5. Heavily loaded trees, rusty fruit, smaller "offs," no profit.
6. Spray or dust thoroughly or not at all.
7. Large seedlings will need one and one-quarter pounds to cover adequately while one-quarter pounds may be sufficient for trees just coming into bearbearing.

Diner (indignantly): Say, waiter, bring the proprietor here at once; there's a fly in my soup.

Waiter: It's no use sending for the boss, sir; he's deadly scared of them himself.—Pup.

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Universally used by the citrus industry for coloring

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Warehouses are located in all important centers in the United States

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Unit of Union Carbide and Carbon Corporation

THE EFFICIENCY OF THE WINTER CLEANUP AS A CONTROL MEASURE FOR THE CITRUS APHIDS

Continued from page 8

disease. In June, only 10.4 percent reached maturity, 37.5 percent were parasitized by hymenopterous parasites and 52.1 percent died of disease.

The mortality was not quite as high with the syrphur fly larvae but on an average less than 50 percent reached maturity. Of the Baccha clavata, our most common citrus aphid predator among the syrphus flies, 22.5 percent reached maturity in March, 54.2 percent in April, 59 percent in May and 43 percent in June. These results were obtained from 750 syrphus fly larvae collected and reared in the insectary. This data of course is for only one season and the mortality of the predators would vary either way from year to year.

In conclusion I wish to say that if the growers would go through their groves in December and January and the first of February and inspect each tree, especially in a young grove, and if any aphids are present, cut the twig off or KILL ALL the aphids on it, they would greatly delay the general infestation. I feel quite sure if the man who was taking care of the grove we have been speaking of as Plot A, had taken the time to inspect each tree and killed all the aphids early in the spring he would have saved time and expense in going over the grove several times later in the spring. Have the trees as dormant as possible during the winter and apply the fertilizer at such a time that it is available to the trees when they should come out in their first flush of spring growth. Clean cultivation during the winter months is also a factor as the citrus aphid can live on several weeks, especially Cud-weed* and Mexican tea*. Spirea and Night-blooming Jasmine and Lemon Vine are also winter hosts and along the northern edge of the citrus belt, Japanese Flowering Quincy and Cherry Laurel. These plants also should frequently be inspected during the winter, or better yet, removed from the vicinity of citrus groves.

We have had a couple of years with rather severe freezes but I certainly think we should be on the lookout for aphids when we have open winters with little or no freezing temperatures. The aphids are not losing their vitality, as they are multiplying just as fast now as they did three years ago when the weather and foliage is suitable. Our breeding records show that they are producing just as many young per adult female as they ever did. The predators have been more efficient the past winter only because citrus aphids have been less abundant which resulted in the predators concentrating on the few colonies which survive the starvation period caused by drought and cold. (1) Guaphaliun (2) Cheropodium.

RURAL WOMEN ARE IMPROVING HOMES

Home improvement work among women of the rural sections of the county has been started here by Miss Pearl Laffitte, home demonstration agent. At a recent meeting of the Hogan club, all phases of the work were considered, and members were enrolled in kitchen, bedroom and living room improvement, exterion beautification, and every day good housekeeping.

A number of other clubs in the county are carrying on home improvement work also. Miss Virginia P. Moore, assistant home demonstration agent, has been in the county and scored homes in all parts of the county.

Osborn Brushes

For Cleaning Citrus Fruit

The more progressive packing houses have come to appreciate the real value of using Osborn Brushes for washing and polishing citrus fruit.

Osborn Brushes are carefully and accurately made to fit all standard scrubbing and polishing machines. They can be installed easily and with a minimum of time and expense.

Only the best grade of straight grained hardwood lumber is used. Hair and fibre are carefully selected to give you longer wear and a higher quality of work.

Osborn stands back of its product so that you can depend on thoroughly satisfactory workmanship and material.

OSBORN

THE OSBORN MANUFACTURING COMPANY
INCORPORATED

5401 Hamilton Avenue

Cleveland, Ohio

GARDENING AND PERENNIAL PLANTING PROGRAM FOR HOME DEMONSTRATION WORK

Continued from page 9

Practically all of the perennials are highly ornamental. Where is a lovlier tree to plant than a pecan, for instance, from Marion County north? Given food and cultivation they grow with astonishing rapidity. And, is there a finer eating nut in the world than a good pecan? No, not even a California walnut. How many Florida homes have plantings of Japanese persimmons? Not many, tho' plantings have doubled many times in the last few years. And the Japanese loquat. What if the frost gets its delightful fruit one or two years out of three. It is still worth planting for its handsome, evergreen foliage and fragrant flowers. And did you know—you from the cherry pie sections of the United States—did you know that the loquat makes a pie fully equal to the famous cherry, and how many other states have as delicious a fruit—ripening in February, March and April—or fruit of any kind? We don't recommend planting any old seedling, but only the big, fine, grafted varieties that can be procured from our nurserymen.

In extreme South Florida may be grown, and should be grown, more generally, the tamarind—second only to the Royal Poincianna in beauty,—and its fruit said to contain more acid and more sugar than any other —is highly valuable as a beverage base—(is indeed an anti-scorbutic, formerly used in place of lime juice). The beautiful little Surinam Cherry, the Carrissa, the cattley guavas—none can be improved upon for hedging or for single plantings. Then the mango, of rapid, vigorous, symmetrical growth—abundant foliage—one of the finest shade trees in the world. And the fruit! An enthusiastic admirer of the mango, and to know the mango is to be enthusiastic—says:

"Mango is another name for a revelation that comes to one through a season or two, but never in a day. One's first Florida summer, he wonders whether the mango can ever be quite as luscious as a perfect peach. In his second summer, we are told, one wonders whether the perfect peach can ever quite equal the mango. There are mangos and mangos, but the Haden mango is King. The Haden mango, have the sizes and shape of the largest avocado, immediately delights the eye, but does not immediately convince the palate. With its rose red, its yellow, its emerald and gold, it is but the handiwork of some clever painter, until one has won his way to creduality by picking and scraping with a thumb nail at its radiant skin."

There are those of us who while we concede the mango to be King or Queen, if you please, of all fruits, are still uncertain whether the Haden is any more delicious than the Mulgoba, from which it sprang, or the Alphonse or the Cecil.

The home demonstration agents, cooperating with and working under the direction of, the home demonstration department are carrying this perennial planting and gardening program into practically every county in the state,—north and south alike. They are visiting rural homes, and arousing the interest of the women and the children in the program. Contests are being staged to encourage the women and girls to grow a wide variety of vegetables and to serve every day in the year, at least two vegetables from the home garden.

The possibilities in growing new vegetables and the opportunities for the enrichment of the diet through the use of new vegeatbles and fruits are being demonstrated, and the women are eagerly accepting the instructions.

Club girls in beginning their garden programs are required to plant at least six perennials during the first year and it is hoped that perhaps by the end of the fourth year the trees or vines planted will be yielding and supplying the family table, with a surplus for the market a bit later.

Among other perennials that demonstration agents are encouraging club members to plant, are the members of the muscadine family that thrive so well in North Florida. Students of Florida history will recall the success with which the French settlers around Tallahassee met when they planted vineyards there many years ago, and that in a few years after the settlers had staked out their claims, vineyards vieing with the best in the old world, were flourishing, and that wines and other grape products were at one time shipped from Florida in large quantities. Today Florida buys a large part of her grape products from her sister state on the Pacific Coast.

It was stated at the Farmers' and Fruit Growers' Week in Gainesville last summer, by a Speaker who had visited vineyards in both the old world and the new, and himself a grower of grapes of the highest quality, that Florida could produce as fine grapes as those grown in any other part of the world.

While the growing of bunch grapes has already become a profitable industry in many sections of the state, Florida could produce enough so that no grapes would have to be imported, and we are encouraging the club members to plant whatever variety thrives best in their particular location, and to plant at least enough to supply the home larder.

In addition to encouraging the women and girls in growing fruits and vegetables to supply food for the rural homes and in instructing them in the uses of many of the foods hitherto little known among the rural sections, the home demonstration department has urged the setting of plants which would not only yield fruit, but would serve as ornamentals.

A program of home beautification has been kept in mind by the home demonstration department, and in addition to planting the utilitarian fruit tree, we have added the growing of flowers. The counties are choosing county flowers to grow and study and develop for the purpose of adding color and beauty to the garden program.

Columbia County, for instance, has chosen the dahli aand has planted nine barrels of dahlia bulbs this spring. Duval County has named the marigold as its flower and will hold a marigold show in the summer. Citrus County has already planted six hundred rose bushes and will plant more.

PAINTER'S

Simon Pure Citrus

and

Gem Farm Crop FERTILIZERS

ARE

"Time Tried and Crop Tested"

Our Brands are the Acknowledged Standard by which Growers of Florida have judged all Fertilizers for nearly 40 years.

"Giving all we can for what we get instead of getting all we can for what we give" is the policy of

THE E. O. PAINTER FERTILIZER CO.

Jacksonville, Florida

We want Florida people to be content with Florida homes, and to live at home. We might adopt for our motto this year, "Live at Home."

We want cooperation.

You who have read Les Miserables will remember Grantiere. You will remember the society of the A. B. C. You will remember the self appointed task of the Society of the A. B. C. was to educate the people. You will remember how busy the leader was when the time came for active revolution, for the rebuilding of the barricades, and all hands had to be set to work. You will remember that when the chief had assigned everybody to the task of carrying the message of revolt to all the various sections of Revolutionary Paris, there were yet left the stone cutters, who had formerly been quite revolutionary, but more recently had been giving themselves entirely to playing dominoes. Who would carry the news to arouse the stone cutters?

"I will" shouted Grantiere. Poor Grantiere was very fond of the chief, but he had no principle. He did not know whether he was a Royalist or a Republican or Jacobin.

"You will" exclaimed the chief. "How can you fire the hearts of the stone cutters when nothing will fire your own?"

But Grantiere insisted that he could. So, having no one else to send, the chief sent him. An hour later, having completed his own assignment sooner than he expected, he dropped into the stone cutters to see how Grantiere was getting along. He found Grantiere playing dominoes.

I have read of a time in English history when all of England was like a box of tinder waiting only for a spark to burst into a much needed revolution. But the British poets were busy writing roundelays.

You will remember that when Rome was burning a very prominent Roman was so emerged in playing the fiddle that he could not stop.

I want to say to the Florida Horticultural Society and to every society working for the improvement and prosperity of the state, and expecially to those who do not have the highest appreciation of the many beautiful health fruits in Florida, who do not realize the necessity for a "live at home" program, that this is no time to be writing roundelays—that this is no time to be playing the violin.

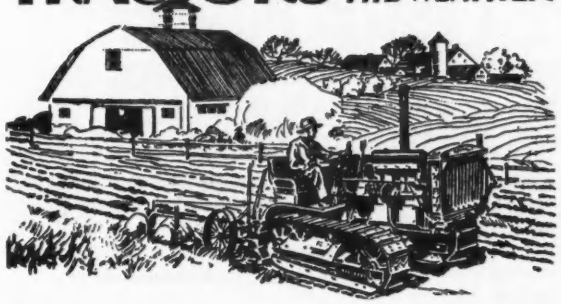
It is up to the Horticultural Society of Florida, as well as to all the institutions that are interested in the state's development, to organize themselves into educational associations for the purpose of presenting the truth, not only concerning the medicinal and dietetic virtues, but the aesthetic value of Florida's fruits and vegetable products, in order that beauty may take the place of ugliness, that thrift may supplant shiftlessness, and that orderly, smiling gardens and groves may cover the unkept, barren places. It is up to you and all of us to disseminate the truth to our folk in Florida—to make them realize that the same soil the same sunshine that combined to make Florida the fruit and vegetable garden of the Eastern part of the nation, must be ALSO made to feed the folk at home.

The original paradise was a garden and ever since the gates closed on that first man and woman, their descendents have sought to regain the lost estate. Why? Because instinctively they know that the garden contains all the elements that make for happiness—beautiful surroundings, quiet, peace and plenty.

The exact location of that first

Continued on page 32

"CATERPILLAR" TRACTORS BIGGER THAN THE WEATHER



Whenever your soil is ready and you are ready . . . . . your "Caterpillar" Tractor will be ready, too! It will ride over the soft spots, it will provide plenty of power in gripping tracks to turn heavy cover crops—to conquer hills and to turn big furrows. To own a "Caterpillar" is to have assurance that grove work will be done at just the right time to conserve moisture, to prepare the way for a big and profitable crop, and to do it all better, quicker and cheaper. Write for information today.

The power era is here—Investigate the "Caterpillar"

McDONALD & BURGMAN
JACKSONVILLE MIAMI

Clewiston Motor Company, Clewiston, Florida

CATERPILLAR

SUNSET QUALITY TISSUE FRUITWRAPS BEST AND MOST ECONOMICAL TO USE

SUNSET Citrus Wraps

We guarantee our quality, printing, service and price.

FRED C. STRYPE

140 Lafayette St., New York City

Sole Distribuotrs of

Citrus Wraps for Continental Paper & Bag Mills Corp.

FEEDING CITRUS TREES FROM A PHYSIOLOGICAL VIEWPOINT

Continued from page 6

safest materials to give the tree, they are not to any degree physiologically effective enough to justify their use in the hands of an able grower without supplementing them with concentrated soluble nitrogenous sources. Neither are the organic sources of nitrogen economically effective; they are only temporary resources until the grower can produce the necessary organic material by cover cropping or other means so that the cheaper soluble sources of nitrogen can be used more effectively and economically.

If we have spent so long a time in discussing the subjects of water and nitrogen in producing growth do not become impatient; they constitute 99% of the problem of securing maximum growth at minimum cost. If organic matter is present the other plant requirements are usually cared for; you will have hard work getting sufficient nitrogen for the tree without having to buy some of the cheaper phosphates from the fertilizer companies. You will of course have to have phosphorus for your cover crop; but if you can grow a cover crop your trees will probably have sufficinet phosphorus in time. As far as growth is concorned the same thing is true of calcium, potash, sulphur, magnesium and other elements. Keep this in mind; plant cells are much alike in the elements contained; they all consist of water and complex nitrogenous compounds with other elements; when these plant cells decay and are returned to the soil little besides the nitrogen and water is lost; so if the soil contains plenty of decaying organic matter (plant cells) it contains plenty of plant food, excepting perhaps water and nitrogen; and it has a better chance of containing these.

Suppose that the tree has reached bearing age; until you are ready to produce fruit on this tree your problem has been a growth problem, producing as much root, stem, and leaves as possible under conditins available, and modifying conditions so that growth may be produced more easily and economically. Till this time you have tried to keep the root system always ahead of the leaves, so that substances are always ready to enable the tree to utilize for growth the energy stored in the sugar as fast as it is manufactured. But the production of fruit buds depends upon somewhat different conditions. When the leaf area gets larger and absorption is slowed down, sugar accumulates at the base of the leaves, and fruit bud differentiation takes place. This usually only takes place when the light is sufficiently intense in late spring to early fall. Any check in growth brought about by a lessening of the water or nitrogen supply will usually cause fruit bud differentiation, if the leaf activity is not seriously interfered with. Certain varieties of citrus such as the Pineapple orange (a high carbohydrate tree with fine bushy growth) will do this without a heavy check in growth and this type of tree will usually bear heavily as long as all the material necessary for growth (nitrogen and water particularly) is available. Another type of tree, the Valencia and Connor's Seedless (low carbohydrate trees with upright sucker type of growth) will require an entirely different treatment to cause fruit bud differentiation. Until it reaches maturity such a tree cannot produce sufficient carbohydrate for concentration at the base of the leaf as the root system is much more active than the leaf surface. Pruning only accentuates the condition. Heavy applications of potash which reduce the absorption of water and nitrogen, and stimulate leaf activity may upset the ratio enough to cause differentiation, but age is one supreme remedy. At some point in the life of the tree sugar making catches up with absorption, and from then on the problem of the grower is to keep the

Continued on page 34

Announcing our

Removal

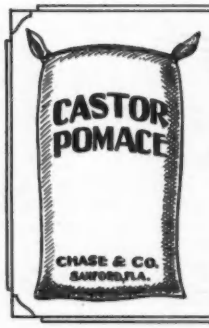
to our new factory and warehouse building just completed at

1714 Chicago Ave.
Orlando
Opposite Coliseum

Write for our new catalog of complete line of packing house supplies.

Southeastern Supply Co.
Orlando

Formerly Southeastern Electric & Supply Co.



CASTOR POMACE
An Economical Fertilizer for Citrus, Vegetables and Lawns,
ANY QUANTITY
CHASE & CO.
SANFORD, FLA.

HOTEL HILLSBORO
Tampa, Fla.
TOP O' THE TOWN
European Plan, Fireproof 300 Rooms With Baths
THE CENTER OF TAMPA

TEXIDE

A petroleum base insecticide designed especially to meet the needs of the citrus grower.

TEXIDE is more than a pest killer. TEXIDE is crop insurance because it not only prevents reinfestation over long periods of time, but stimulates the general health of the tree. Write for information or ask any Texaco Agent.

Correspondence is invited.

THE TEXAS COMPANY

Texaco Petroleum Products

District Office, Jacksonville, Florida

Texaco Agents located in citrus centers:

Orlando	Eustis	Tampa	Titusville
Haines City	Clermont	Fort Pierce	DeLand
Lake Wales	Lakeland	Bartow	Arcadia
Avon Park	Tarpon Springs	Leesburg	Fort Myers
Kissimmee	Cocoa	Clearwater	

Shippers Statement Regarding Proposed Clearing House

For the information of the public and those who are now associated or contemplate making arrangements with the following shippers for the sale and distribution of their citrus fruit, we feel that a statement should be made regarding our position in connection with the joining of the Growers Clearing House Association movement as proposed to function under the Capper-Volstead Act:

After due and careful consideration it is the individual opinion of the undersigned shippers that:

Inasmuch as the set-up as offered in the Contracts, By-Laws and Charter fails to offer practical means whereby the purposes of the Clearing House can be carried out;

And inasmuch as informal conferences held with representative shippers at the request of Mr. Corey and Judge Walker have failed to find a way whereby suggested modifications can be approved which might make the set-up workable;

And until such time as these conditions might be changed, we cannot, much to our regret, subscribe, either as growers or shippers, to the present contracts, or endorse the structure as now formulated for the Florida Citrus Growers Clearing House Association.

SIGNED

NAME	PLACE
Adams Packing Co.	Auburndale
Alexander & Baird	Beresford
American Fruit Growers Inc.	Orlando
R. W. Burch & Co.	Plant City
Chase & Co.	Orlando
Clearwater Citrus Co.	Clearwater
Fugazzi Bros.	Clearwater
A. C. Haynes	Deland
A. S. Herlong & Co.	Leesburg
J. W. Keene	Frostproof
R. D. Keene & Co.	Eustis
Lake Charm Fruit Co.	Oviedo
J. C. Lee	Leesburg
E. B. Peters	Leesburg
G. Maxcy	Sebring
L. Maxcy	Frostproof
Montgomery-Snyder Co.	Tampa
W. H. Mouser & Co.	Orlando
Nelson & Co.	Oviedo
Richardson-Marsh Corp.	Orlando
L. B. Skinner	Dunedin
S. J. Sligh & Co.	Orlando
Southern Fruit Distributors	Orlando
Standard Growers Exchange	Orlando
St. Johns Fruit Co.	Auburndale
Umatilla Fruit Co.	Umatilla
West Coast Fruit Co.	Clearwater

MEXICAN ORANGES SHIPPED TO CANADA

Orange growers of the Montemorelos and other districts of northern Mexico may ship oranges in bond through the United States to Canada and for export to other countries only from Nov. 15 to March 15, according to a ruling adopted by the department of industry of the Mexican government. This ruling was made to comply with the edict of the U. S. department of agriculture. Because of the prevalence of the orange fly in Mexican groves at no time are oranges permitted shipment for destination in the United States. Fruit is allowed to pass through the United States during the period stated because the fly is dormant at that time. Efforts are being made by the Mexican department of agriculture to rid the citrus groves of that country of this pest.—California Citrograph.

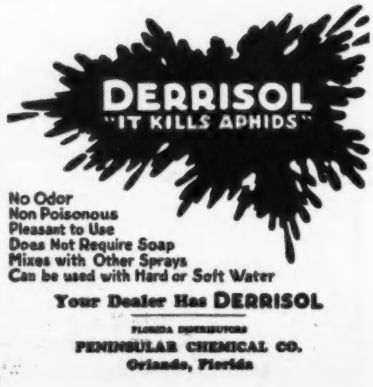
GARDENING AND PERENNIAL PLANTING PROGRAM FOR HOME DEMONSTRATION WORK

Continued from page 29

paradise has never been determined. Those who are still seeking it may find it in Florida, if you, and we, and the other organizations unify our programs, pool our plans and develop the natural beauties and bounties of this region.

The early bird has to get his own breakfast.—College Humor.

For
Summer Control
of Citrus Pests
For Scale, Mealy Bug, White Fly, Red Spider, and other citrus insect pests, spray your trees with VOLCK. It is the only oil spray combining high killing effectiveness with the necessary margin of safety for dependable summer application.
Talk with your nearest dealer
CALIFORNIA SPRAY-CHEMICAL COMPANY
O. R. Blois, District Sales Mgr.
61 W. Jefferson St., Orlando, Fla.
VOLCK
The Scientific Insecticide



IT FLOATS

100 Per Cent Pure

Distilled Anchor Brand Dusting Sulphnr

STICKS, FUMES and KILLS under adverse conditions. It is so light that hundred pound bag is almost twice the size of that of ground sulphur. That is why it goes further and costs less per acre. With ground Sulphur, fineness counts. We stock it in 99% 200 mesh, with or without lime. Our Swan Brand is 99% 300 mesh.

Ask Us Why--

Fico-60 is the best scale killer. We sell Myers Self-Oiling Sprayers. The John Deere is the tractor of lowest upkeep.

Florida Insecticide Co.

Apopka : Winter Haven

"Please Say You Saw It In The Citrus Industry"

FEEDING CITRUS TREES FROM A PHYSIOLOGICAL VIEWPOINT

Continued from page 30

tree growing so that it can hold and mature the fruit that it sets.

This condition is true of all trees which have reached a maximum growth in height, but the problem of production in trees in the early stages of bearing differs according to whether growth is upright or spreading and bushy. Those trees which have because of variety, rootstock, graft union, soil or other condition a spreading, bushy type of growth require heavy and consistent feeding with water and nitrogenous fertilizers at all stages of their growth for best results; while trees producing more upright branches, open heads and much sucker type of growth, or those of the other type which have been top pruned to any extent, will require at the time of fruit bud differentiation (the summer) a reduced nitrogenous feeding and heavier applications of potash until they have settled down to regular and heavy bearing. In the last analysis the type of growth should be the condition used as a basis for deciding the fertilizer and other cultural practices.

In conclusion, I wish to apologize to you for trying to give you in thirty minutes the material which usually occupies a month's work for an advanced student in pomology, and keeps him pretty busy also.

RURAL WOMEN OF DADE COUNTY ENROLL FOR HOME IMPROVEMENT

Home improvement work among rural women, which was concentrated in the southern end of the county last year, has been started in the northern part of Dade county this year. Miss Pansy Norton and Miss Marian Swain, home demonstration agents, have been carrying on the work with rural women of the county.

Women of the county made a tour recently of 11 homes in the southern end of the county which were improved last year. The first home visited was a storm house in which everything had been ruined by the storm. The woman was given a supply of fertilizer crocus sacks after the storm. She bleached and washed them and made drapes for the windows. The rugs and carpets were retouched with dyes, the floors were stained, the furniture was repainted and upholstered, making the whole place attractive looking.

Other homes were visited which showed what could be done in kitchen improvement, bedroom improvement, exterior beautification, gardening, and poultry work at small cost.

A Little Too Soon

The movie theater owner had just insured his place against fire. As he signed his name he turned to the insurance agent and asked:

"What would I get if my theater was to burn down tomorrow?"

"Oh, I should say about ten years", replied the insurance man, nonchalantly.

When serving refreshments on a card table, use white blotting paper under the cloth. This absorbs any liquid which may be spilled and protects the cloth from being stained by the colored table top as well as the top itself.

Bluing stains may be removed by washing the article with alcohol.

CLASSIFIED Advertisments

The rate for advertisements of this nature is only five cents per word for each insertion. You may count the number of words you have, multiply it by five, and you will have the cost of the advertisement for one insertion Multiply this by the total number of insertions desired and you will have the total cost. This rate is so low that we cannot charge classified accounts, and would, therefore, appreciate a remittance with order. No advertisement accepted for less than 50 cents.

REAL ESTATE

WILL EXCHANGE West Texas cattle ranch for unimproved or improved land in Florida. What have you? Give price and full particulars. T. E. Bartlett, 3410 McKinley Ave., El Paso, Texas.

"BOOK OF TRUTH"
For planters of new groves
Is yours for the asking,
Write Today.
OCKLAWAHA NURSERIES INC.
"Pedigreed Citrus Trees"
Lake Jem, Florida

FOR SALE—Pineapple land in winterless Florida. $15 an acre. Almont Ake. Venus, Fla.

WANT TO SELL HALF INTEREST IN FIFTEEN ACRE SATSUMA BEARING GROVE ON HIGHWAY NEAR PANAMA CITY. ROBT. LAMBERT, OWNER. FOUNTAIN, FLA.

SATSUMA BUDWOOD from Bearing Trees. Hills Fruit Farm, Panama City, Fla.

WANT TO hear from owner having farm for sale: give particulars and lowest price. John J. Black, Box 93, Chippewa Falls, Wisconsin.

WANTED—To hear from owner of land for sale. O. Hawley, Baldwin, Wis.

MISCELLANEOUS

FOR SALE: Packing House Machinery Outfit, complete, 2 car per day capacity, first class condition. The owner is re-placing with new four car capacity outfit. Florida Citrus Machinery Co., Dunedin, Fla.

FOR SALE—Dairy and stable manure, car lots. Link & Bagley, Box 464, Tampa, Fla.

WHITE WYANDOTT Cockrels, regal strain —the best in the country, direct from Martin pens. Utility and show birds $5.00 each; also eggs for hatching $5.00 per 15. W. A. King, Gen. Del., St. Petersburg, Fla.

SELECT CITRUS fruit trees for home and commercial planting, special summer prices. A. E. Nichols, Box 262W, Tampa, Fla.

HIGH BLOOD PRESSURE easily, inexpensively overcome, without drugs. Send address. Dr. J. B. Stokes, Mohawk, Fla.

WANTED
COMPLETE LINE OF CITRUS GROWERS' SUPPLIES
A well known reputable firm of national scope, marketing certain materials required by citrus growers, is extending its line of merchandise to cover complete requirements of its customers.
If you have something excellent to merchandise—fertilizer, orchard heaters, pest control material or equipment, or any similar product for wide distribution—I can tell you whom you should see.
Address: J. T. Pierson, 503 South Union Drive, Los Angeles, Calif.

BEGGARWEED SEED. Place your order for Beggarweed seed now and be assured of delivery. Write for special prices. Wm. G. Ranney, Box 297, Monticello, Fla.

PUREBRED PULLETS FOR SALE—White Leghorns and Anconas ready to ship. Barred Rocks and R. I. Reds shortly. Several hundred yearling White Leghorn hens now laying 70%. Write or wire for prices. C. A. Norman, Dr. 1440, Knoxville, Tenn.

FOR SALE: Skinner Washer, 4 runway, 16 foot, good condition, owner is replacing by a 6 runway, 18 foot machine. Florida Citrus Machinery Co., Dunedin, Fla.

LAREDO SOY BEANS, considered free from nematode, excellent for hay and soil improvement. Write the Baldwin County Seed Growers Association, Loxley, Alabama, for prices.

FARMER AGENTS: Make $25.00 weekly selling Comet Sprayers. Profitable winter employment. You take orders. We deliver and collect. Commissions weekly. Established 35 years. Particulars free. Rusler Co., Box C-18, Johnstown, Ohio.

FOR SALE—All varieties bananas and citrus trees. D. A. Nigels, Palm Harbor, Fla.

FOR SALE: 5 runway foot Spiral Polisher. Owner is replacing by an 8 runway, 16 foot, spiral polisher. Florida Citrus Machinery Co., Dunedin, Fla.

RUNNER peanuts—Spanish peanuts Early speckled - Osceola - White Chinese and Bunch Velvet Beans. All varieties peas and Soybeans. Large or small lots. H. M. Franklin, Tennille, Georgia.

AVOCADOS - SEED — Grafted. Reliable bearers only. John B.Beach, West Palm Beach, Florida.

PLANT AVOCADOS in Redland Section, Dade County, where they thrive best. Best paying crop in United States. Send for prospectus. Brooks Properties, Realty Board Bldg., Miami.

BABY CHICKS: Send no money, shipped C. O. D., pay mail man when delivered. Leghorns $14.00 per 100; reds, orpingtons, minorcas $16.00; mixed $13.00; live delivery, postpaid. Florida Baby Chickery, Lakeland, Florida.

COW PEAS. Brabhams, Irons and Whippoorwills. Nice clean stock. Chase & Co., Sanford, Florida.

ROUGH LEMON Seedlings in any quantity, special summer sale, very attractive prices. A. E. Nichols, Box 262W, Tampa, Fla.